

42 Inch Plasma Display Training & Trouble Shooting Guide



PDP-42A3HD

PDP-4214HD

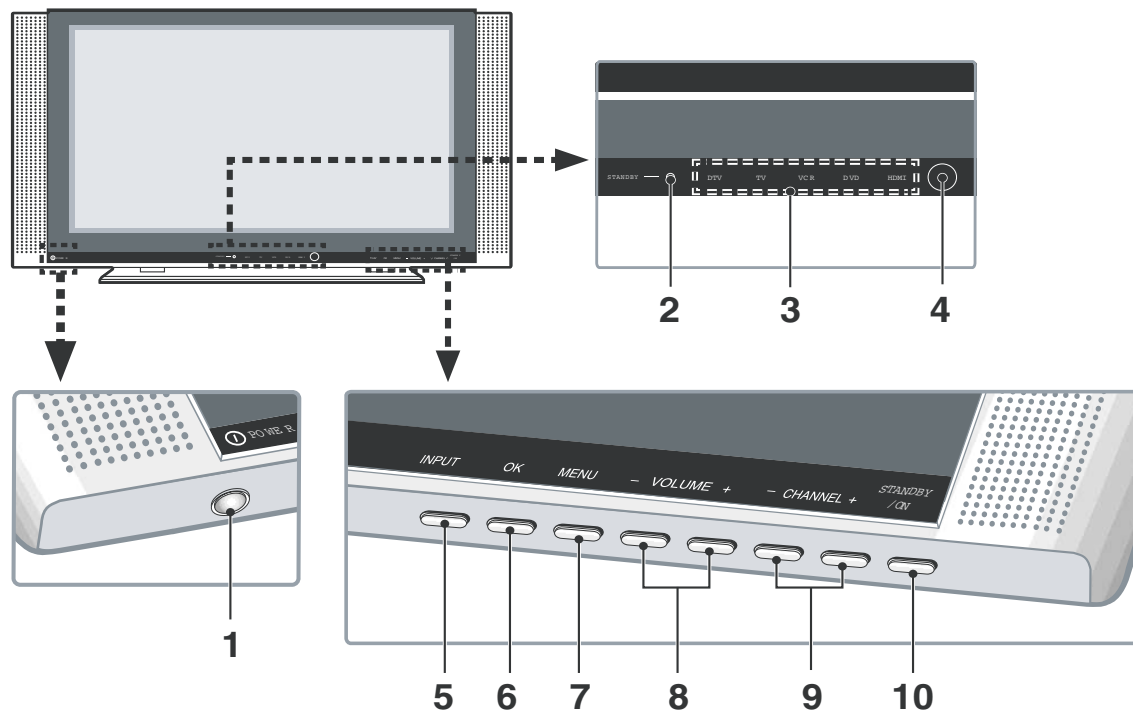
**Technical Training Department
1925 E. Dominguez Street
Long Beach, CA 90810**

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Plasma Display

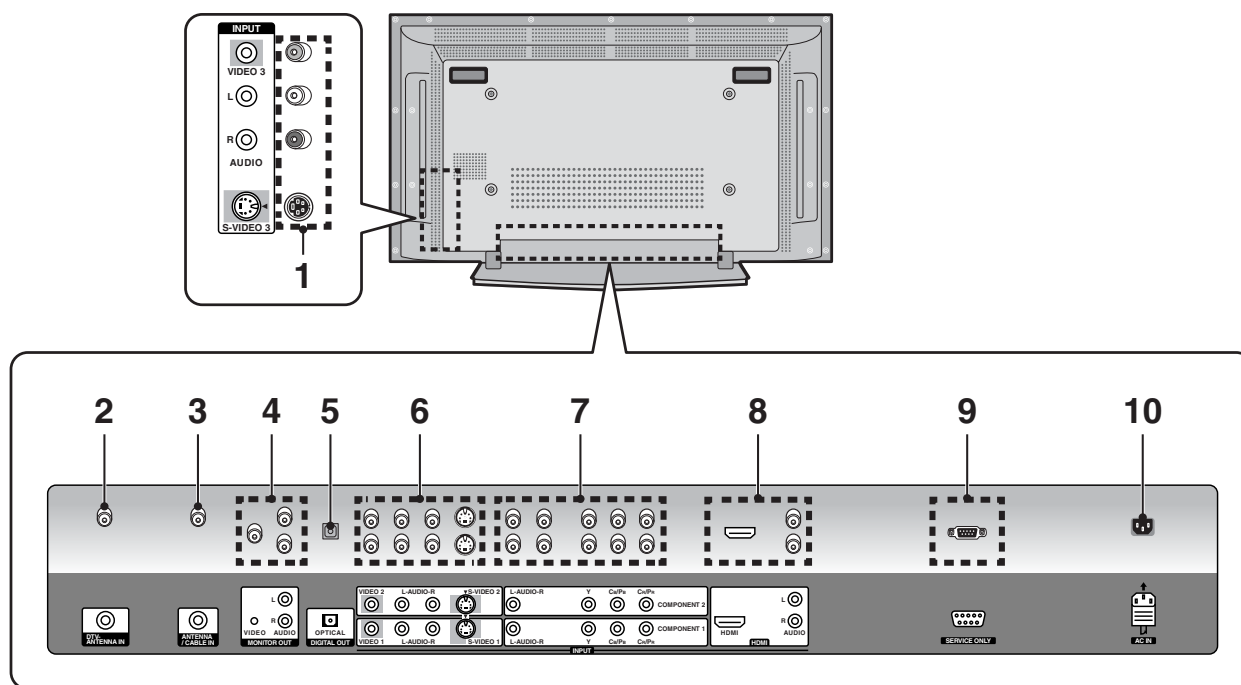
Front view



- 1 **POWER** button
- 2 **STANDBY** indicator
- 3 Current input source indicators
- 4 Remote control sensor
- 5 **INPUT** button

- 6 **OK** button
- 7 **MENU** button
- 8 **VOLUME -/+** buttons
- 9 **CHANNEL -/+** buttons
- 10 **STANDBY/ON** button

Rear view

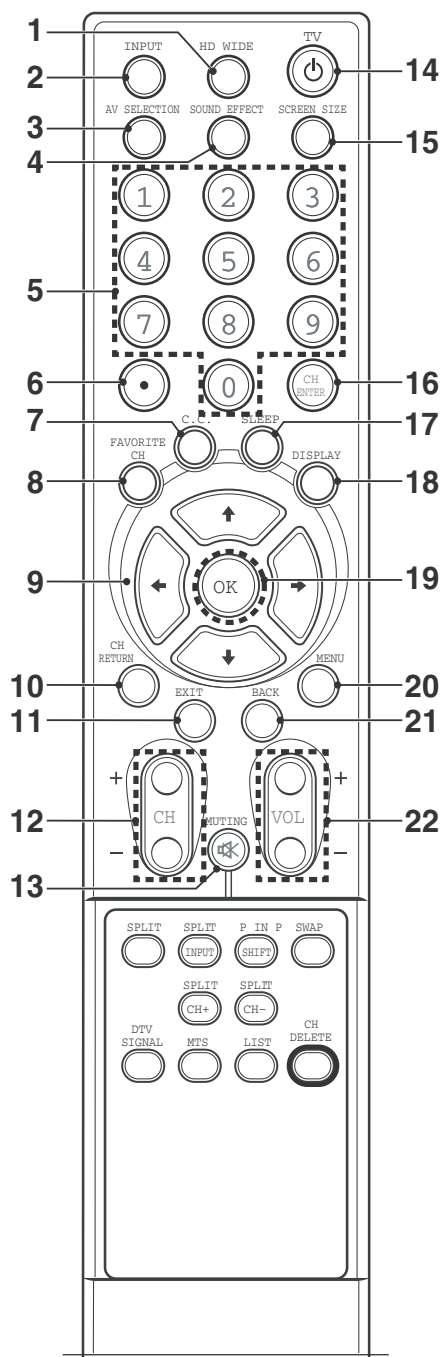


The terminals have faced downward.

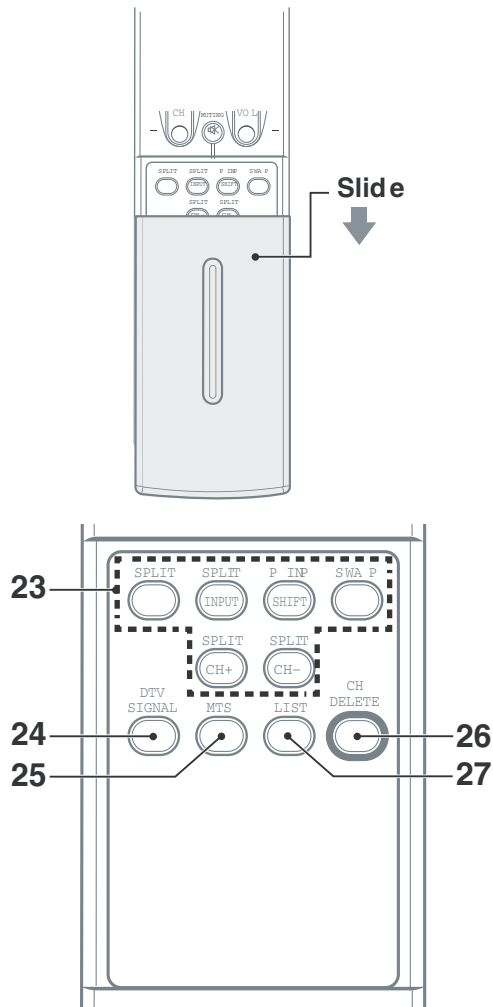
- 1** VIDEO 3 terminals (AUDIO/VIDEO/S-VIDEO)
- 2** DTV-ANTENNA IN terminal
- 3** ANTENNA/CABLE IN terminal
- 4** MONITOR OUT terminals (AUDIO/VIDEO)
- 5** DIGITAL OUT terminal (OPTICAL)
- 6** VIDEO 1/VIDEO 2 terminals (AUDIO/VIDEO/S-VIDEO)

- 7** COMPONENT 1/COMPONENT 2 terminals (COMPONENT VIDEO/AUDIO)
- 8** HDMI terminal (AUDIO/HDMI)
- 9** RS-232C terminal (service only)
- 10** AC IN terminal

Remote control unit



- 1 HD WIDE** : Adjusts the picture to fit the 16:9 wide aspect ratio. Available in DTV mode.
- 2 INP UT** : Displays all available input sources. Press the **↑** or **↓** button to select the required input source.
- 3 AV SELECTION** : Selects the picture mode (Standard, Dynamic, Movie, Game or User).
- 4 SOUND EFFECT** : Selects the sound effect (Flat, Speech, Movie, Music or User).
- 5 0-9** : Select the channel.
- 6 ●(dot)** : Selects the sub-channel of DTV.
- 7 C.C.:** Display captions while in the closed-caption source.
- 8 FAVORITE CH** : Selects the favorite channel.
- 9 ↑/↓/←/→**: Controls the cursor in the on-screen menu.
- 10 CH RETURN** : Returns the selected channels.
- 11 EXIT** : Exits from any display.
- 12 CH +/-** : Changes the channel.
- 13 MUTING**: Mutes the sound. To turn the sound back on, press the MUTING, VOL+ or VOL – buttons.
- 14 TV** : Switches between operation and standby mode.
- 15 SCREEN SIZE** : Changes the aspect ratio of the screen (Zoom/Cinema/Full/4:3/Wide).
- 16 CH ENTER**: Enters channels.
- 17 SLEEP**: Sets the sleep timer.
- 18 DISPL AY**: Shows the display.
- 19 OK**: Executes a command.
- 20 MENU** : Displays the on-screen menu .
- 21 BACK**: Returns to the previous menu screen.
- 22 VOL +/-**:Sets the volume.



23 SPLIT Function Buttons

SPLIT : Selects the SPLIT mode (Off, PIP, Twin1 or Twin2).

SPLIT INPUT : Selects an input source for the sub picture.

P IN P/SHIFT : Selects a position for the sub-picture.

SWAP : Interchanges the main picture and sub-picture.

SPLIT CH +, SPLIT CH - : Changes the channel of the sub-picture.

24 DTV SIGNAL : Displays the signal strength and quality.

25 MTS : Selects the sound mode.

26 CH DELETE : Deletes a channel in Edit Channel List.

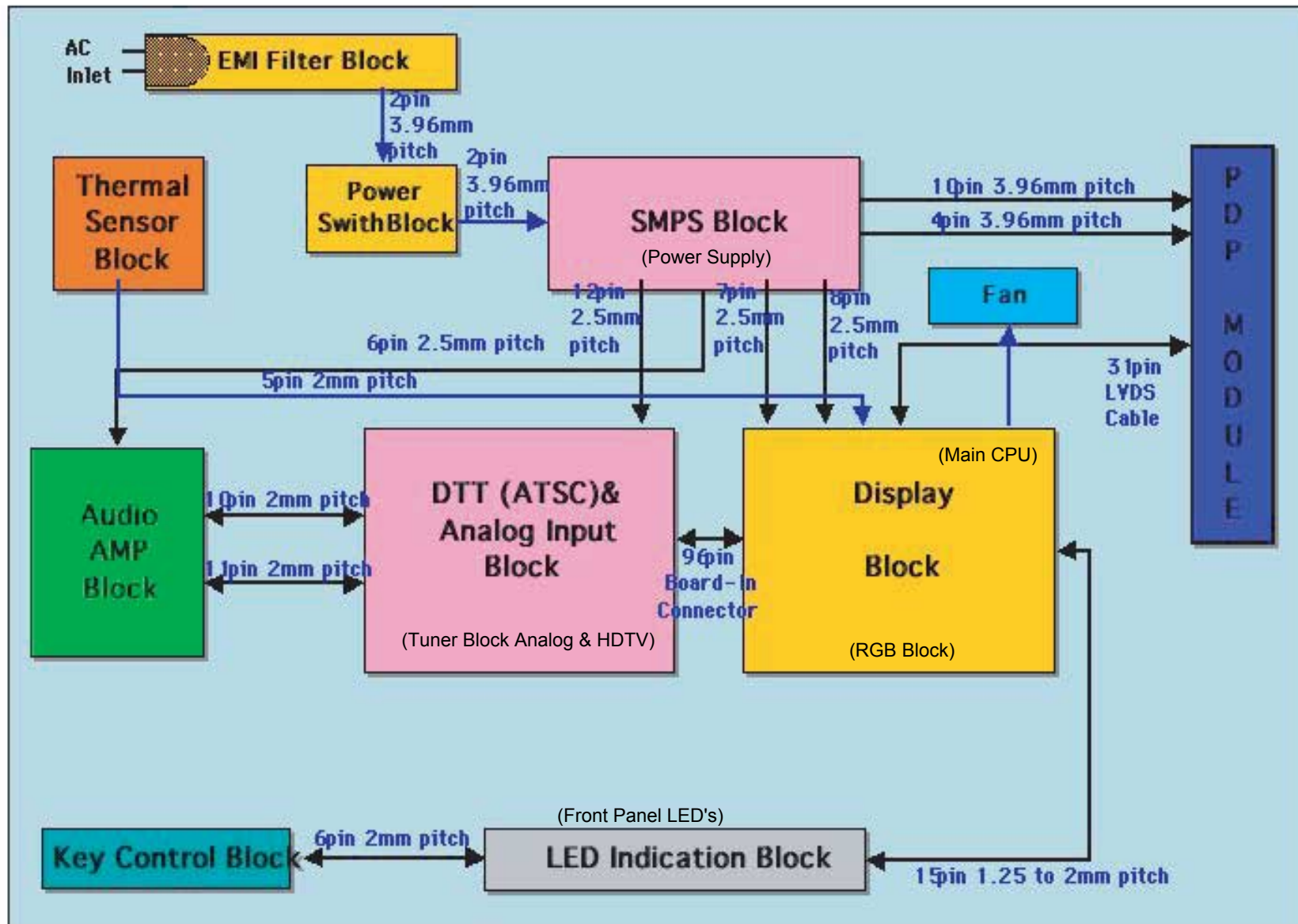
27 LIST : Displays the channel list. Press the **↑** or **↓** button to select the required channel.



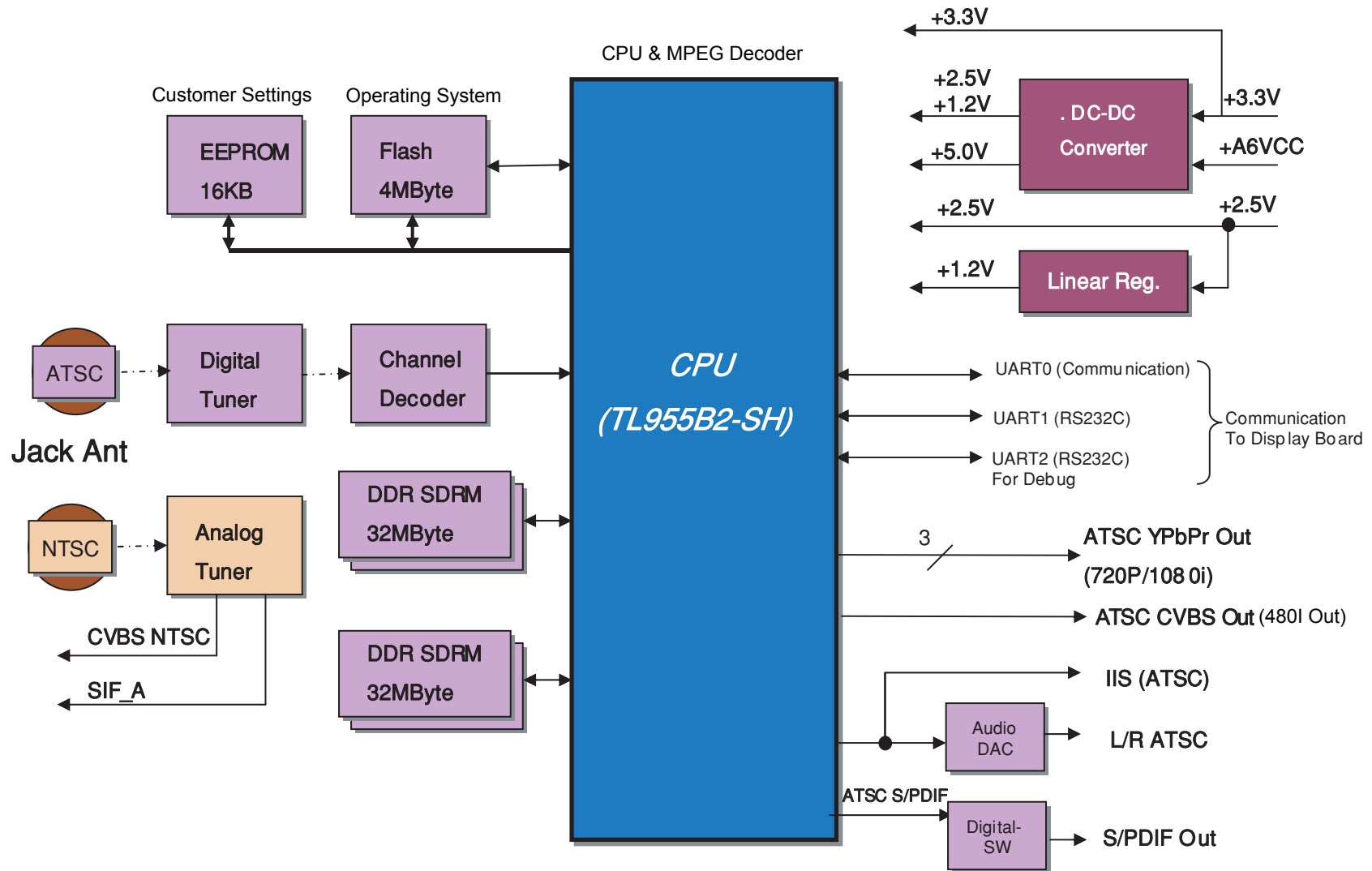
NOTE

- When using the remote control unit, point it at the Plasma Display.

Overall BLOCK



ATSC Block

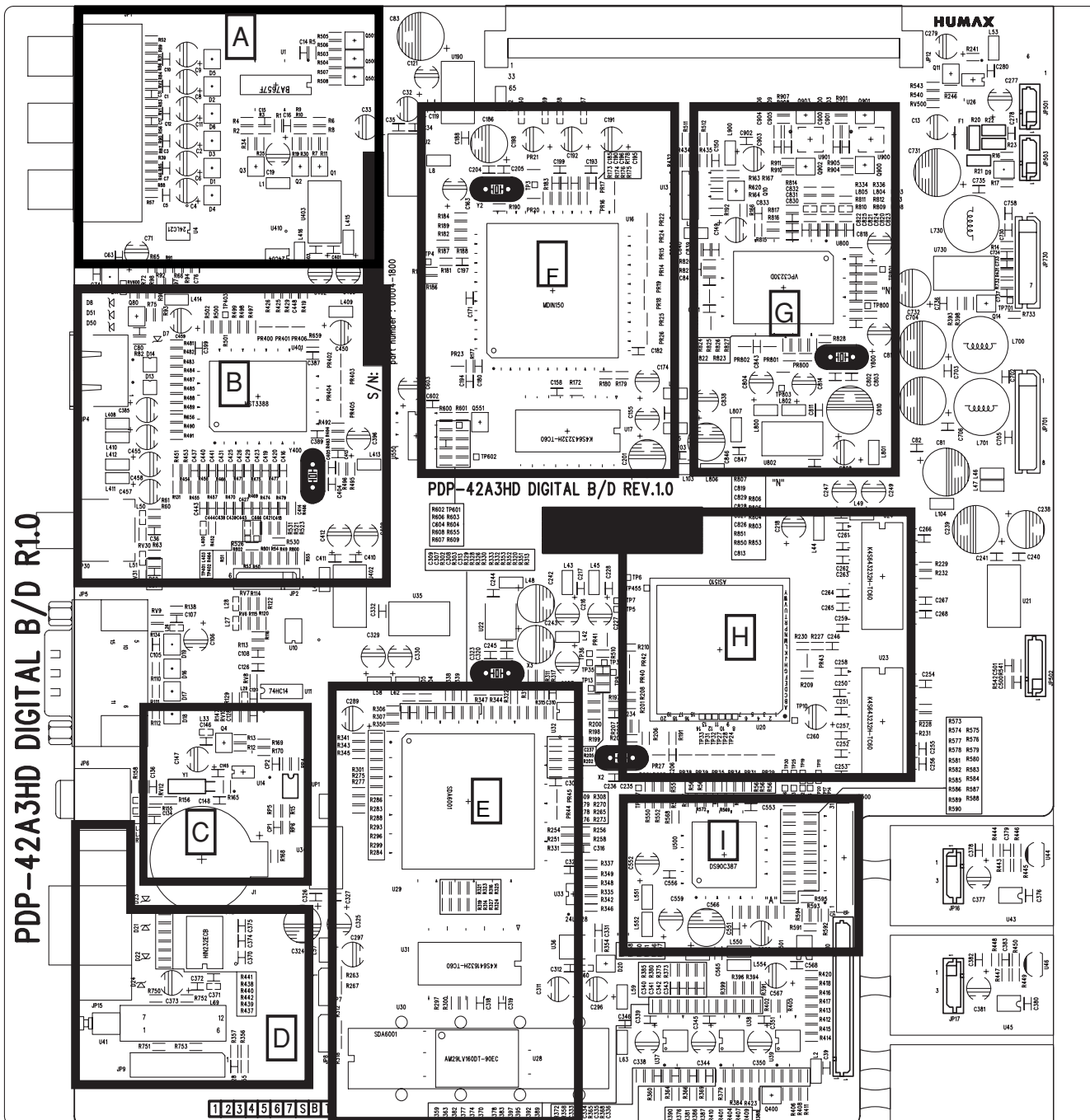


ATSC = Advanced Television Systems Committee (Digital Television Standards)

NTSC = National Television System Committee (Analog Television Standards)

1. Digital PCB Block

- (A): Component Video input Block(BA7657)
- (B): ADC and HDMI receiver Block(MST3388M)
- (C): Real Timer Block(M41T81)
- (D): RS232 communication part
- (E): Micom Block(SDA6001+K4S641632H-TC60+AM29LV160DT)
- (F): Deinterlace Block(MDIN150+K4S643232H-TC60)
- (G): Sub-Video Decoder Block(VPC3230)
- (H): Scaler Block(ASI510)
- (I): LVDS transmitter Block(DS90C387)

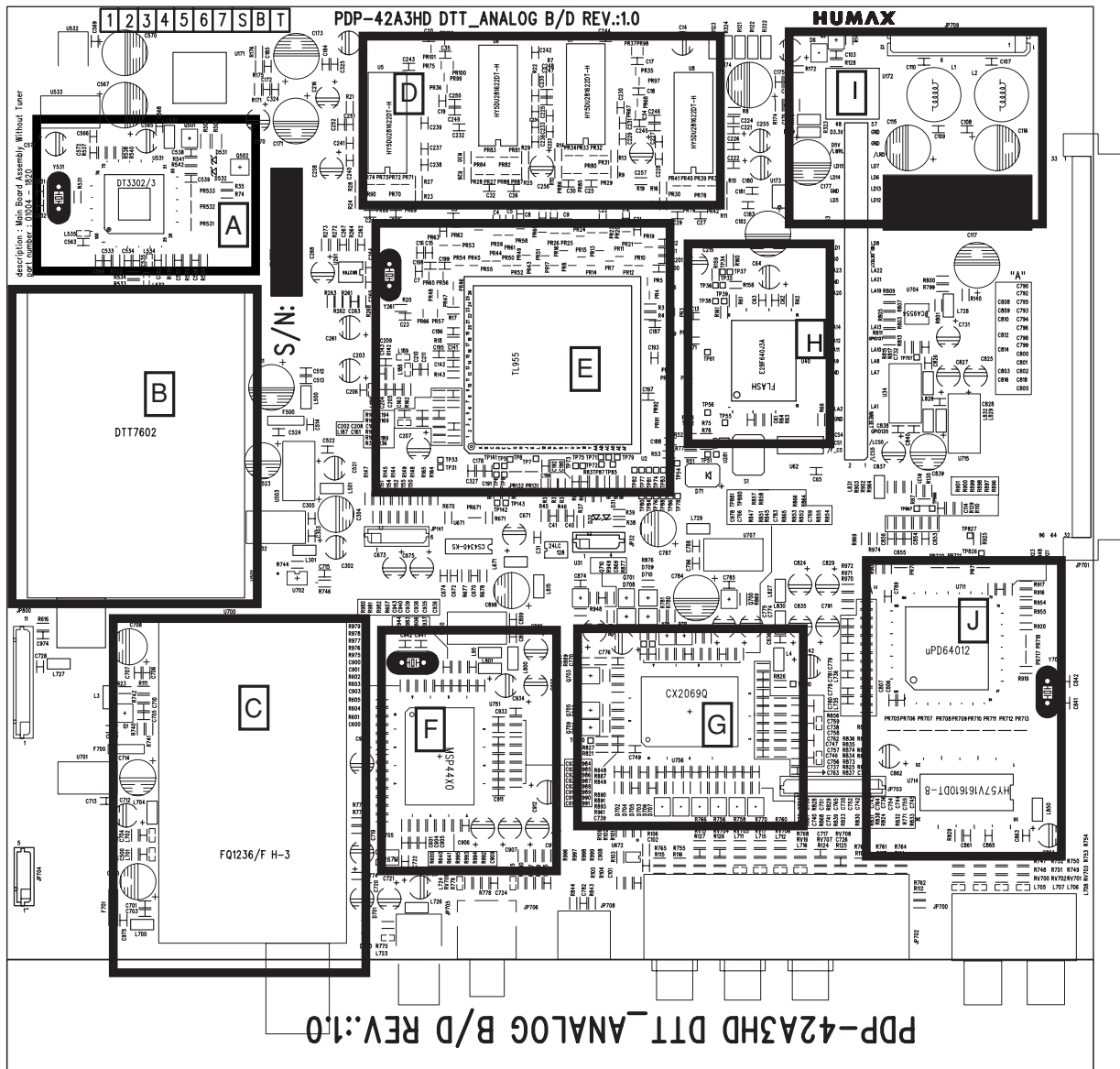


Block Description of DTT

1. DC-DC Block is composed of Regulators(BA05(5V), LP3965ES(1.2V), LP2995MX(VREF,VTT)) and SMPS powers(2V5VCC,3V3VCC,A6VCC).
2. UART Communication is composed of UART1(Communication), UART2(RS232), UART3(RS232 for debug)
3. The EEPROM block stores the current states, channels, and other user setting values.
4. The Flash Rom block stores operation source.
5. ATSC input block is composed of Digital tuner(DTT7608) and channel Decoder(LGDT3303).
6. NTSC input block is composed of Analog Tuner and connects in Video decoder(uPD64012).
7. DDR SDRAM block is composed of 4 32MByte and stores the current Video and information instantly.
8. The CPU block functions MPEG decoder, converts the video format and controls the related IC's.
9. The Audio DAC converts from IIC Audio to L/R Analog Audio.
10. The SPDIF outputs 5.1Ch Dolby Digital audio signal.

2. DTT & Analog PCB Block

- (A): Channel Demodulator Block(LGDT3303)
- (B): ATSC Tuner Block(DTT7608)
- (C): Analog Tuner Block(FQ1236)
- (D): DDR SDRAM Block(HY5DU281622ET-H x 4)
- (E): MPEG Decoder Block(TL955B2-SH)
- (F): Audio Decoder Block(MSP4440)
- (G): Video Switch Block(CX2069Q)
- (H): Flash Rom Block(E28F320J3A)
- (I) : Power input Block
- (J) : Main Video decoder Block(uPD64012+HY57V161610DTC-7)



①: Indication LED Block
 ②: Audio AMP Block(TA2024B)
 ③: AV input Block
 ④: Control key Block



Block Description of Display

1. The ADC & HDMI receiver used on this board (MST3388-110).
2. The Video Decoder is composed of uPD64012 and VPC3230, converts from analog signal to digital video signal. UPD64012 is used for 480I sub picture only.
3. The CXA2069 switches input signal and selects the signal. Analog Only (Tuner,YC and composite).
4. The MDIN150 is de-interlacer, it functions that interlaced signal converts de-interlaced signal and improves picture quality. (I/P Converter)
5. The ASI510 is scaler IC, scaling video signal it interfaces with related IC and outputs 24 bit RGB format video.
6. The SDA6001 is composed of micom and closed caption block, it controls related IC, power on/off system, and signal flowing system.
7. IO expander functions that it increases the IO port from receiving IIC communication signal.
8. The real timer(M41T81) is timer with using the clock generator.

Factory Mode

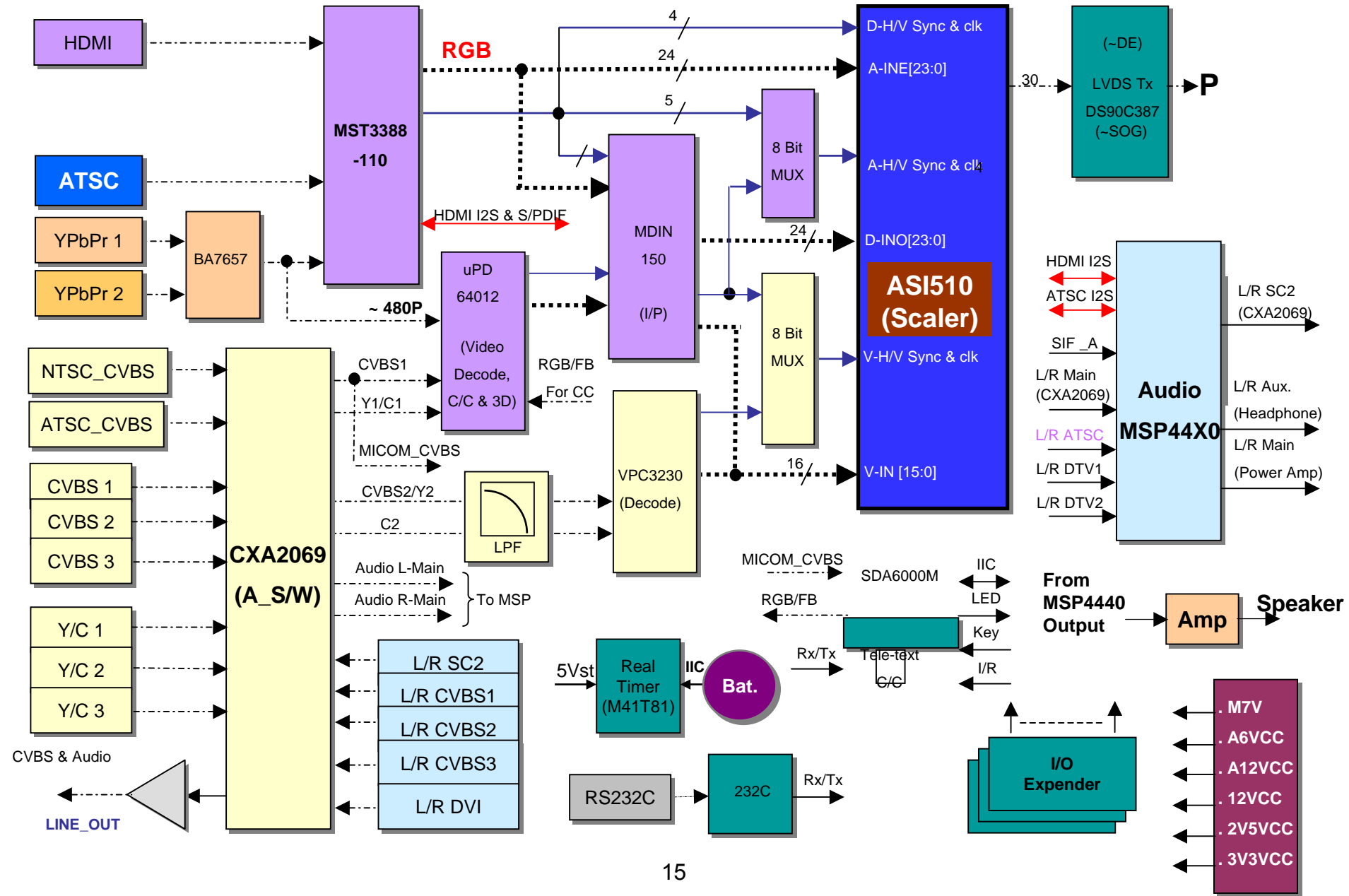
1. •To enter the test mode press keys on remote control in sequence as below.
TV/AV → 0 9 1 7

•You can make adjustments, but proper settings are very critical for set operations

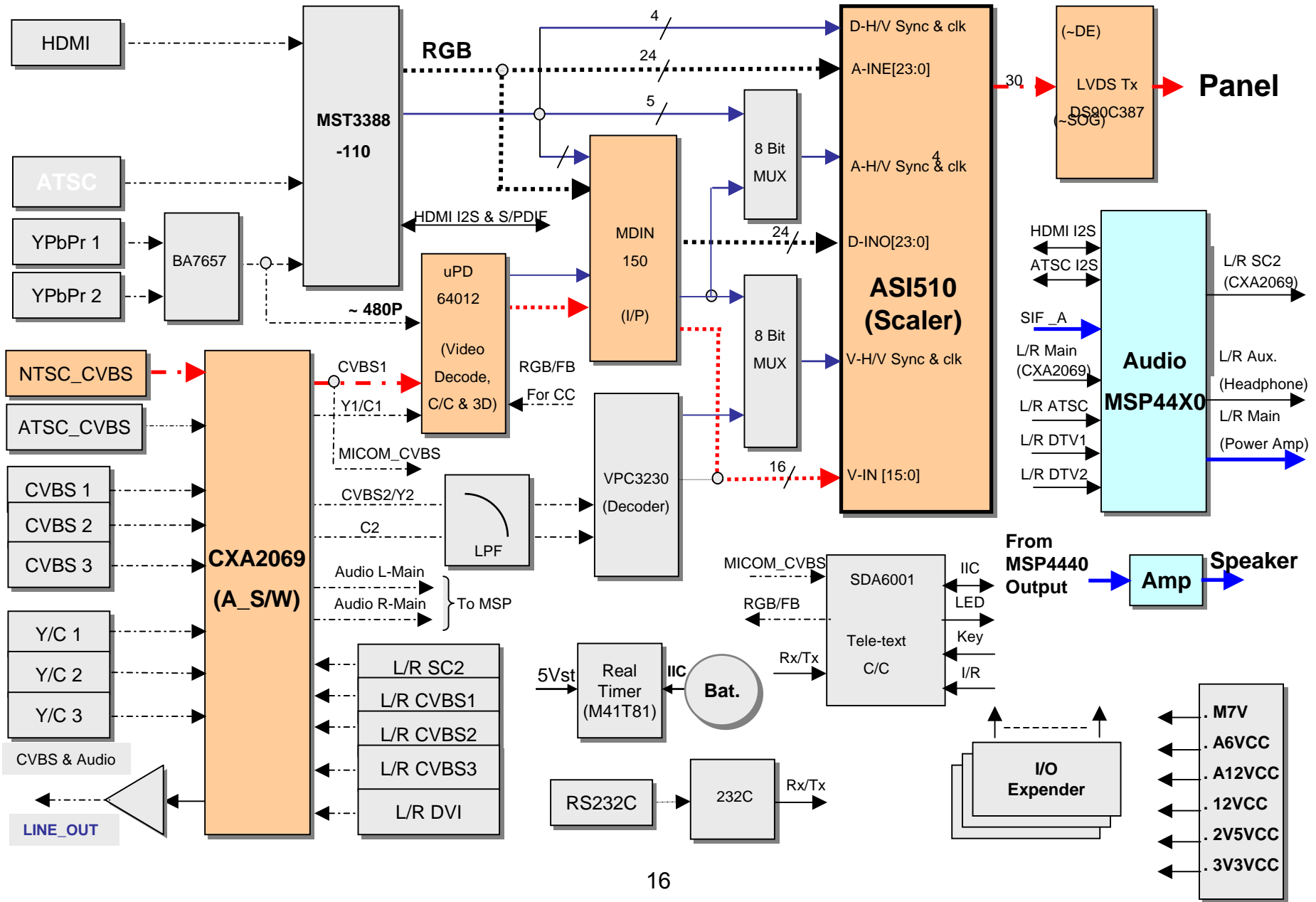
Normally no adjustments are required to this product, even after a repair or PCB has been changed.

2. Self-check mode and error code is not applicable in this set.

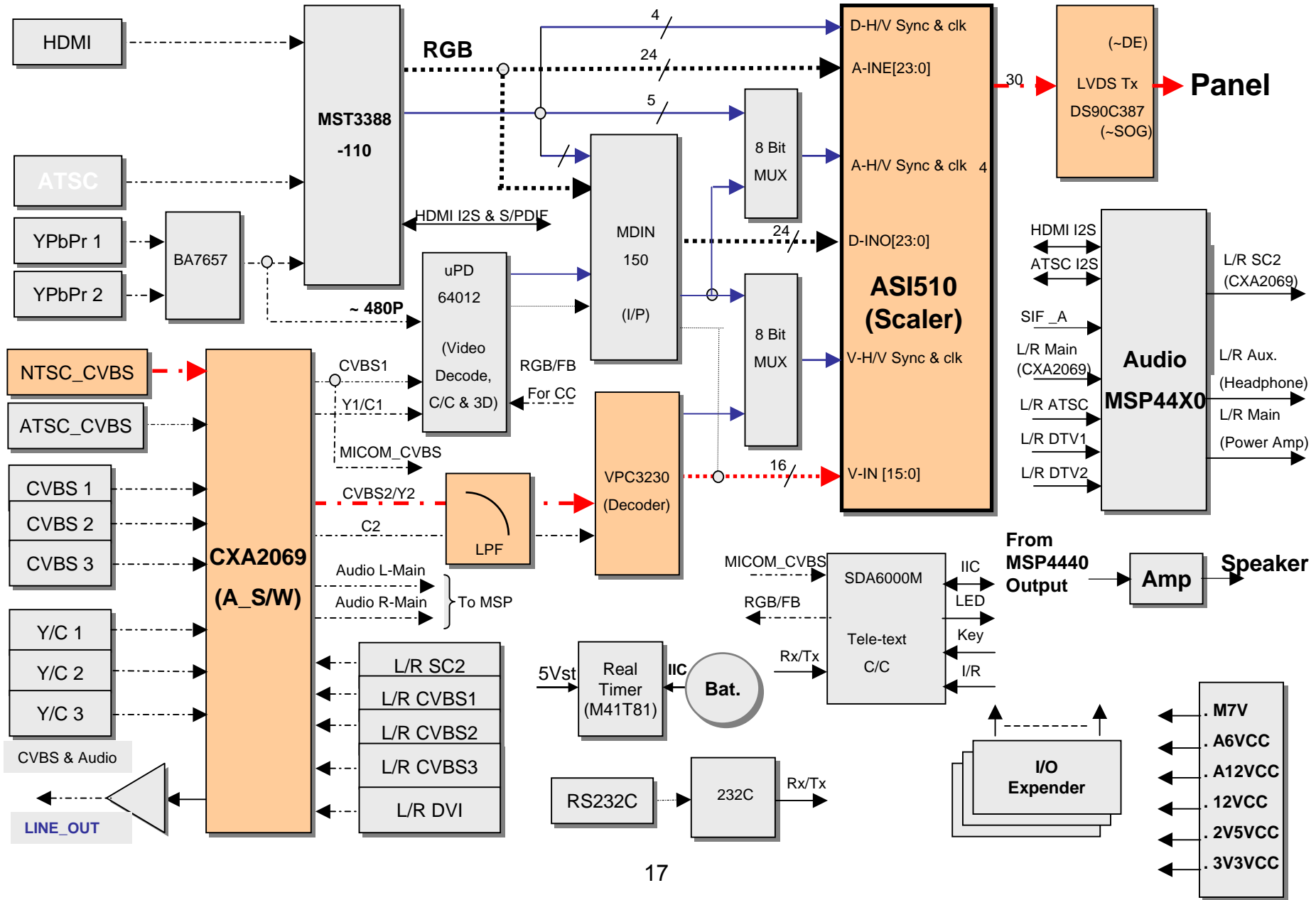
Display BLOCK



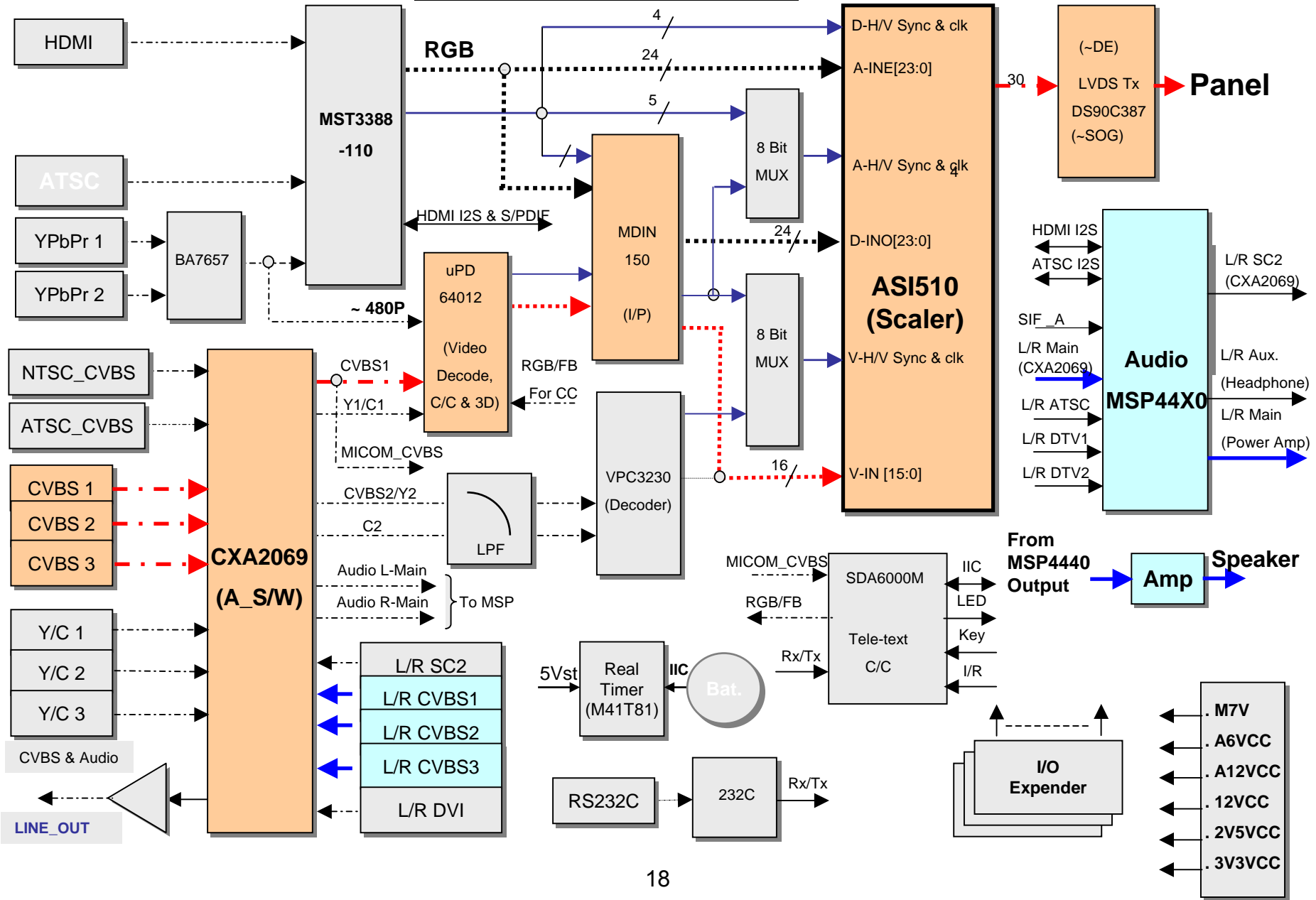
ATV Input(Main)



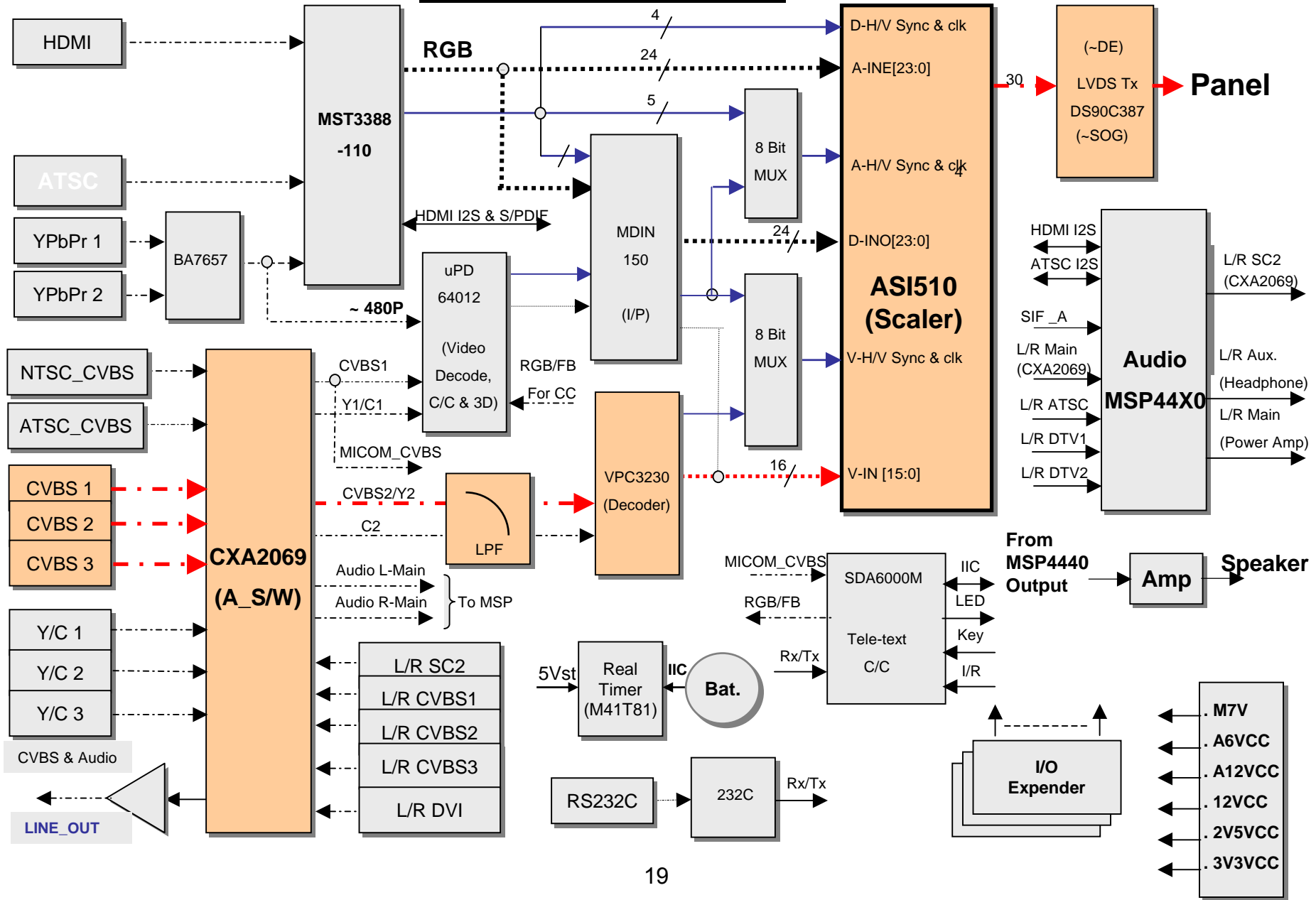
ATV Input(Sub)



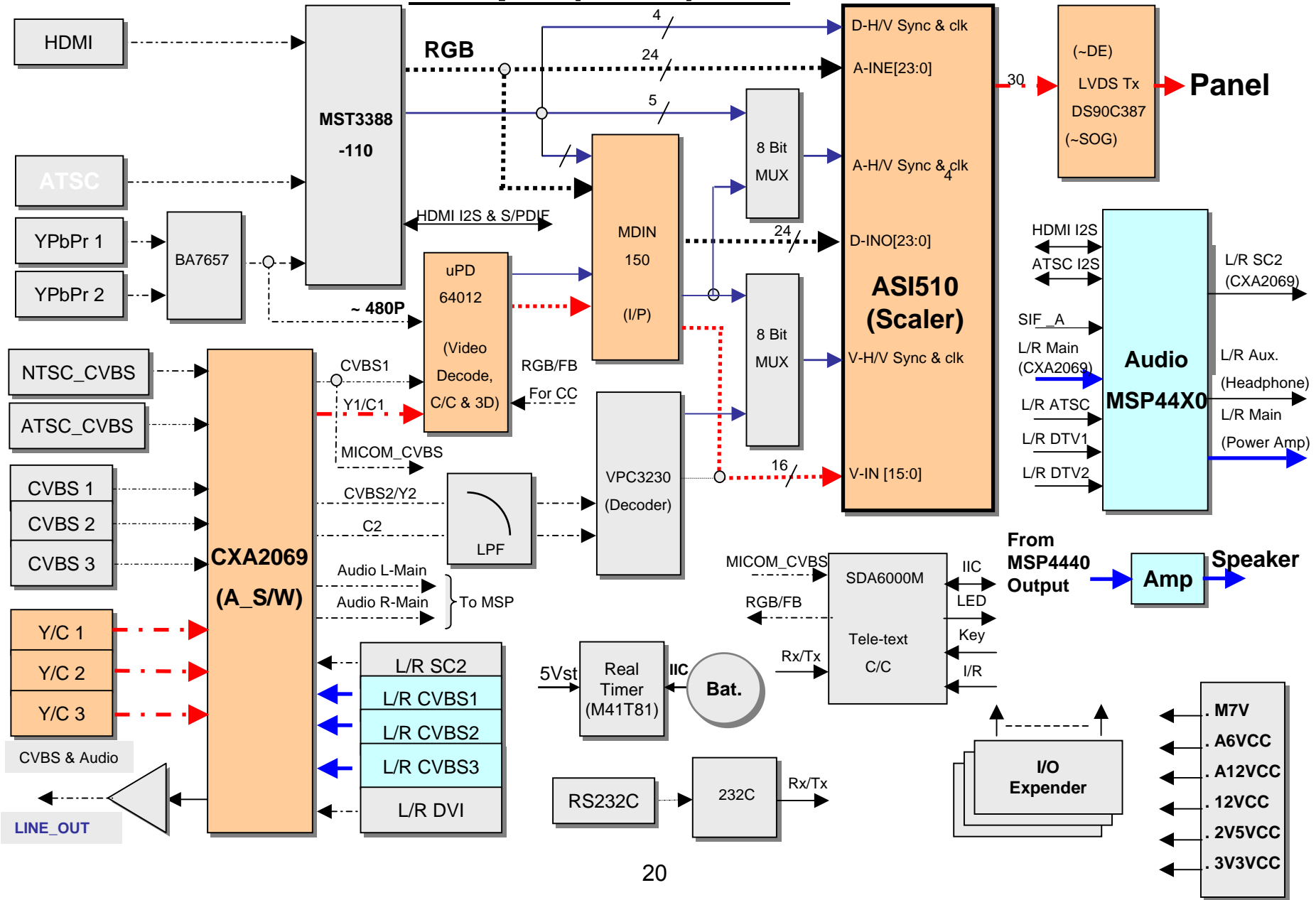
CVBS Input(Main)



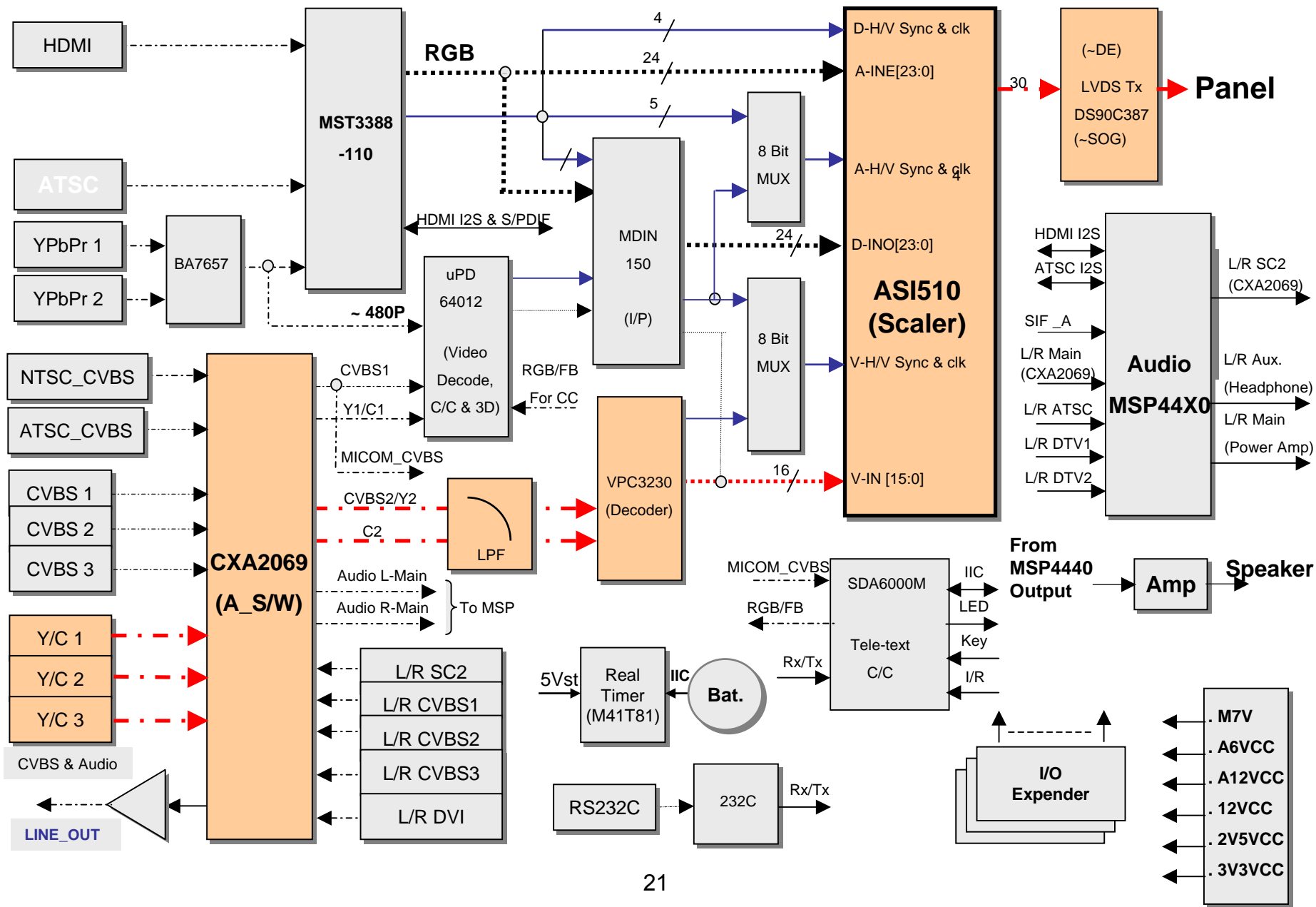
CVBS Input(Sub)



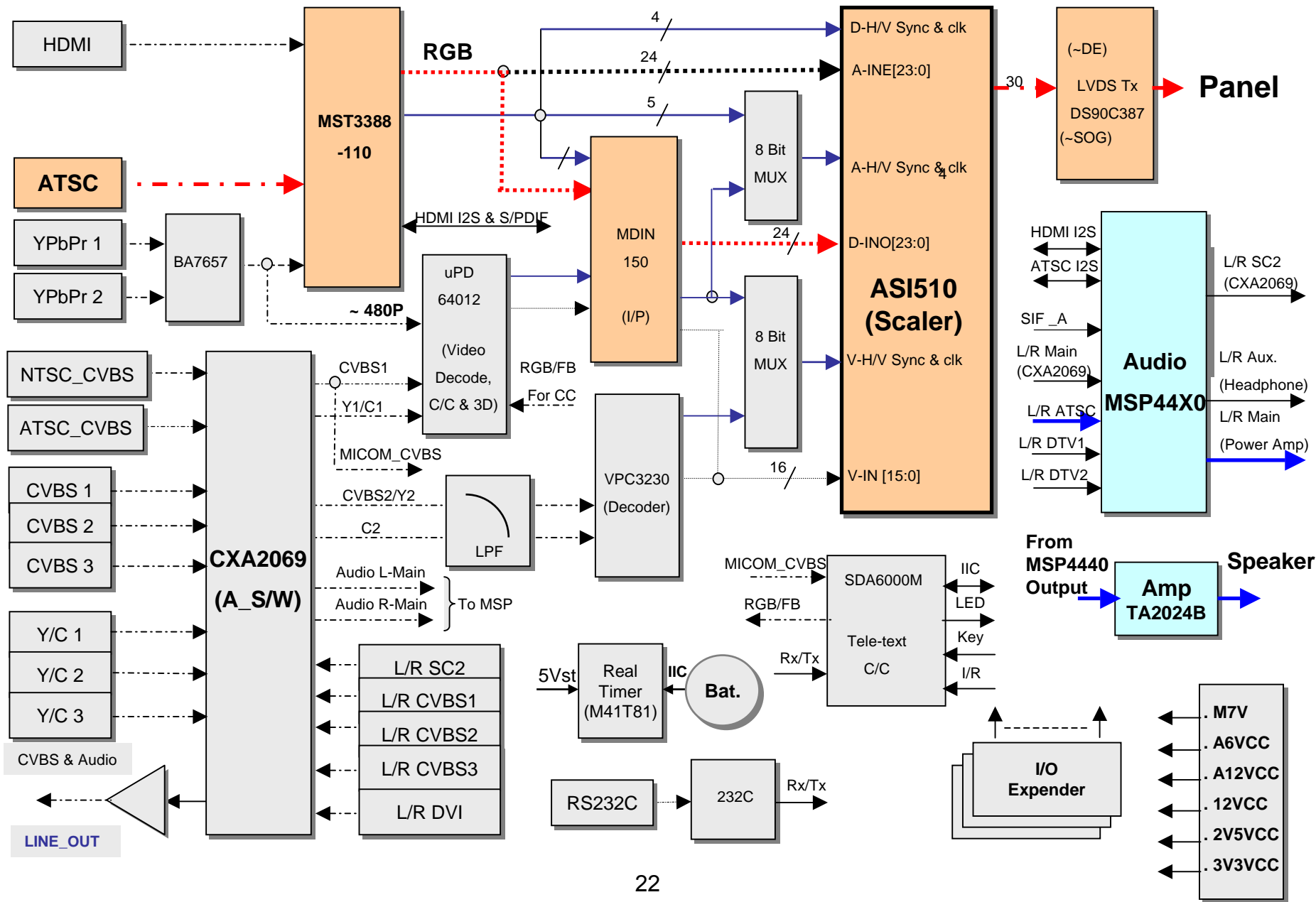
S Input(Main)



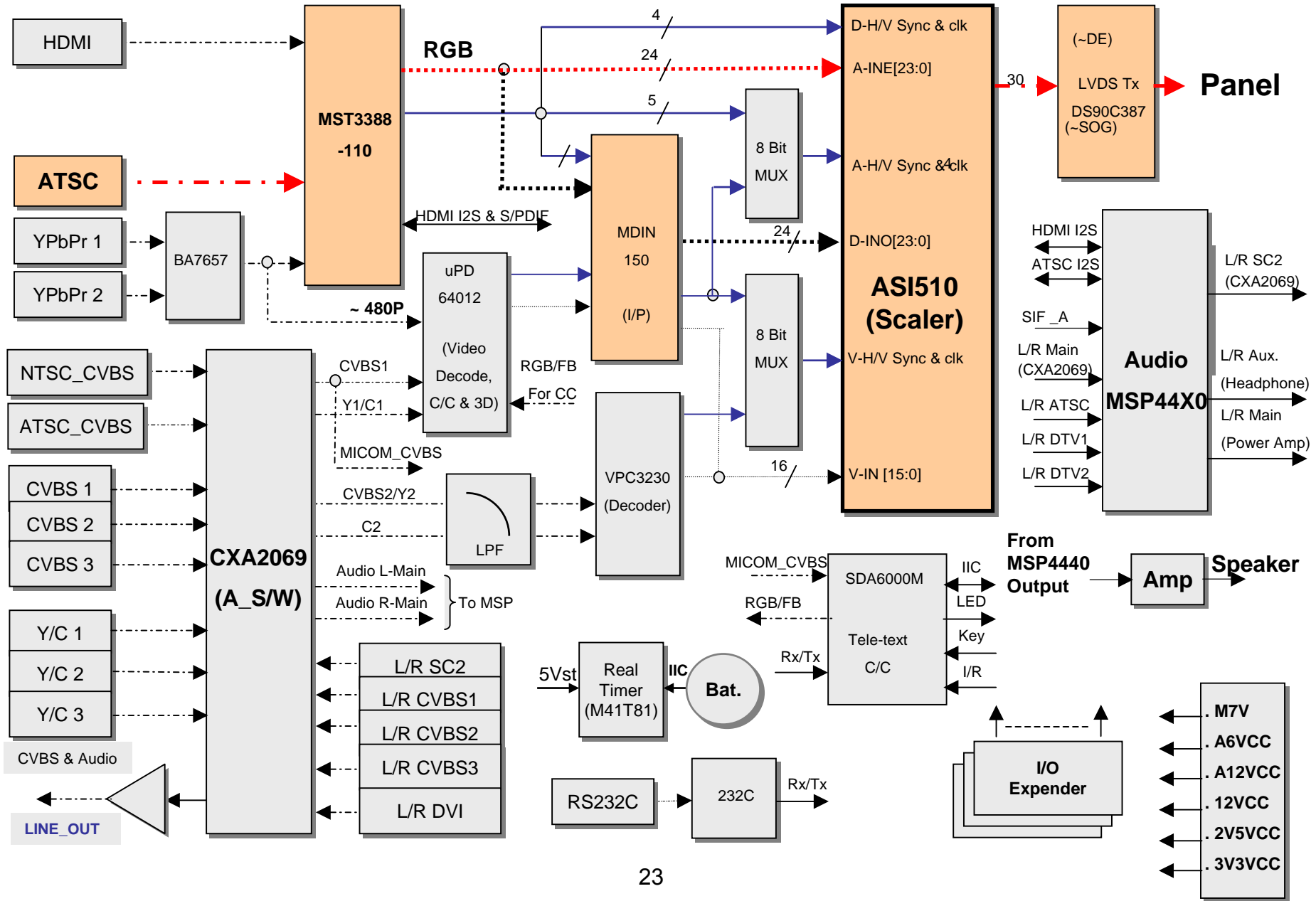
S Input(Sub)



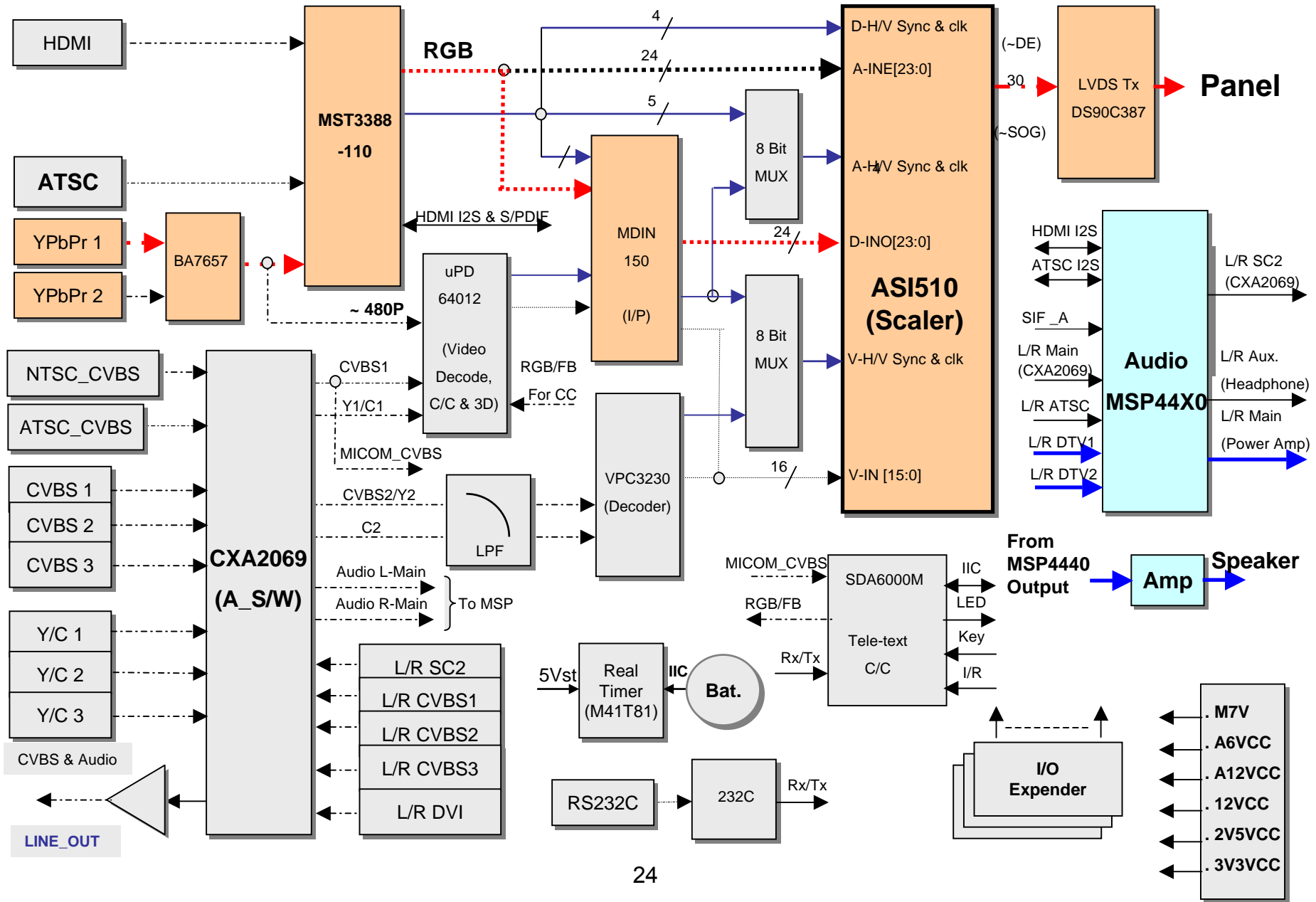
ATSC Input(Main)



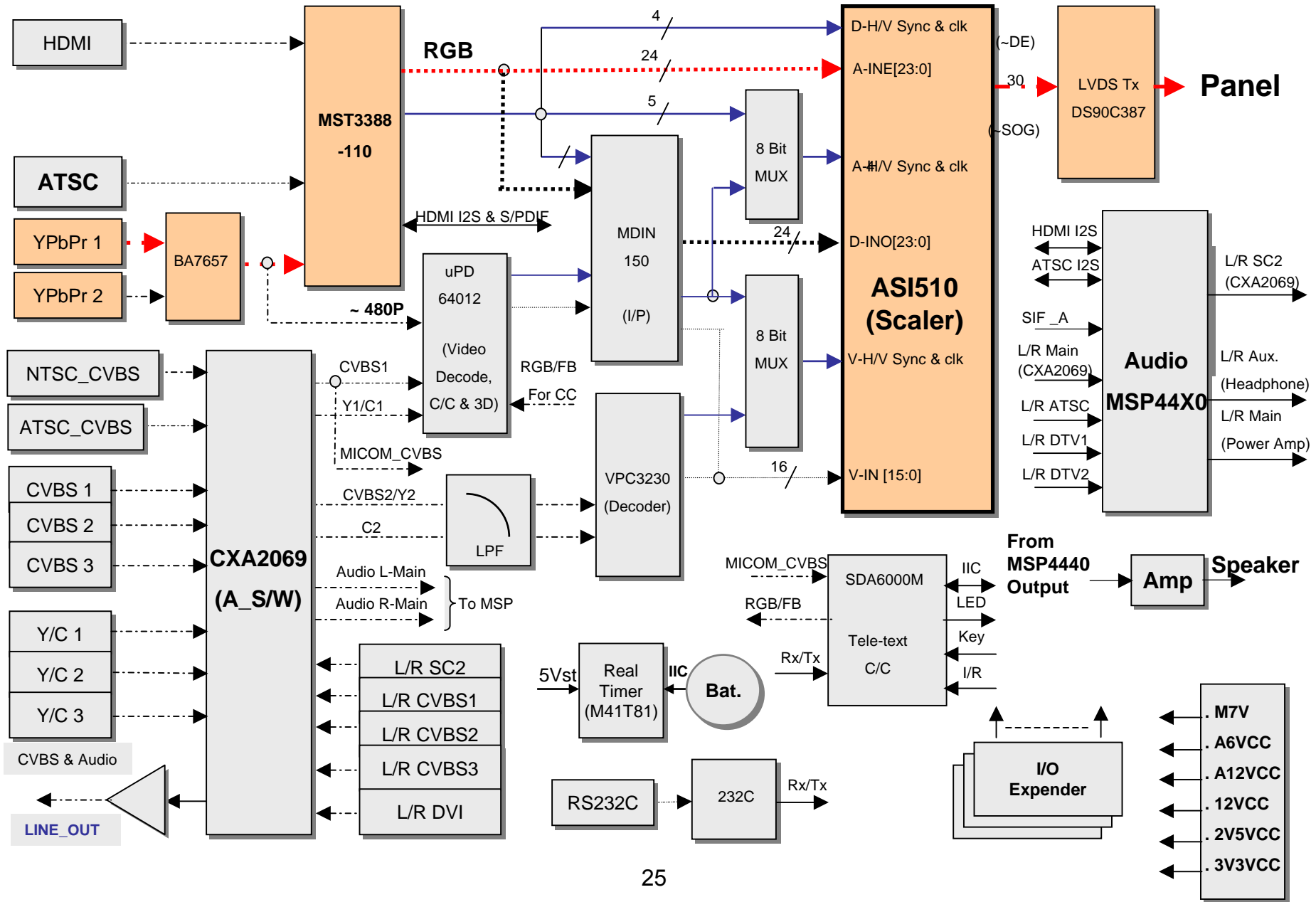
ATSC Input(Sub)



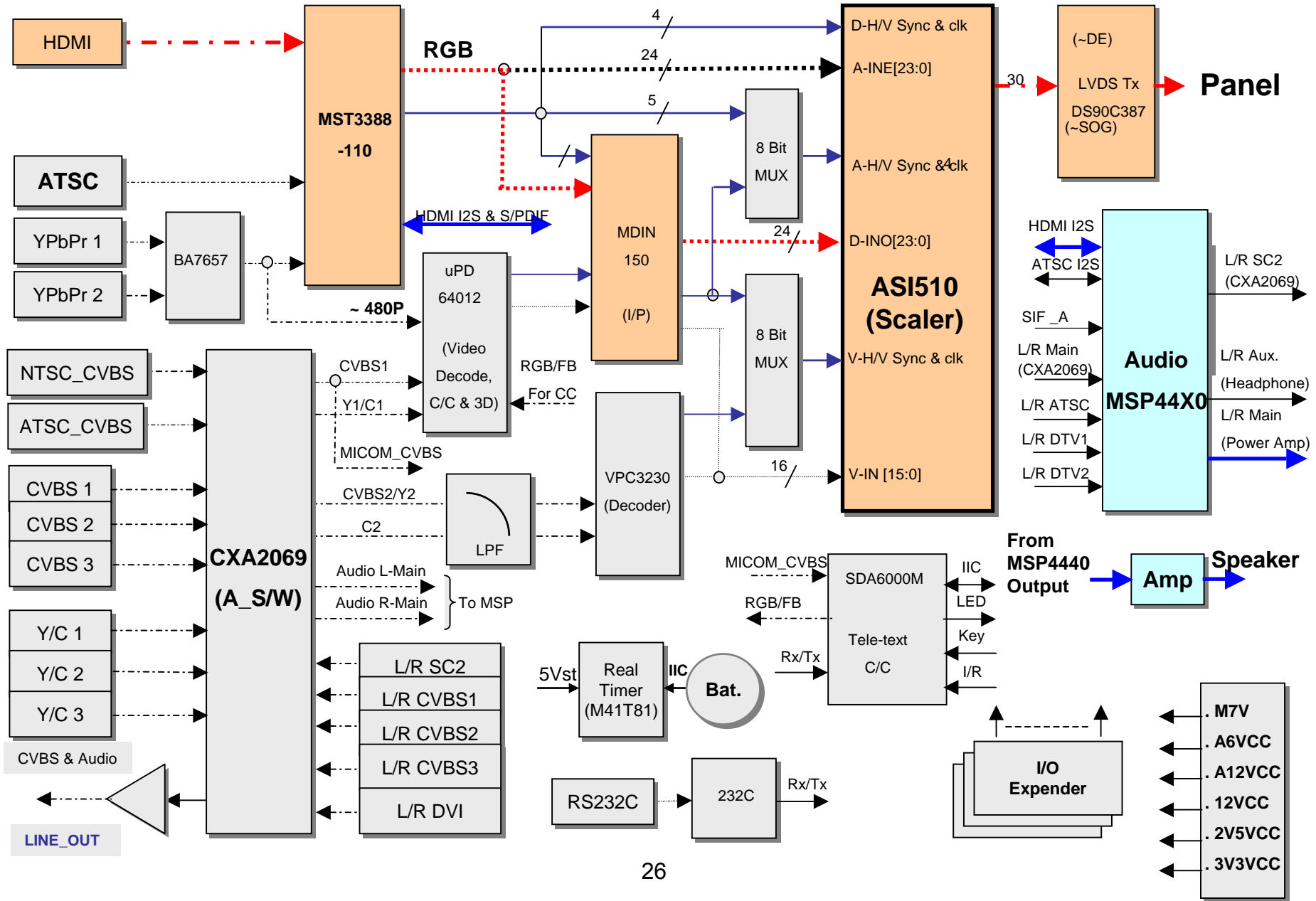
Component Input(Main)



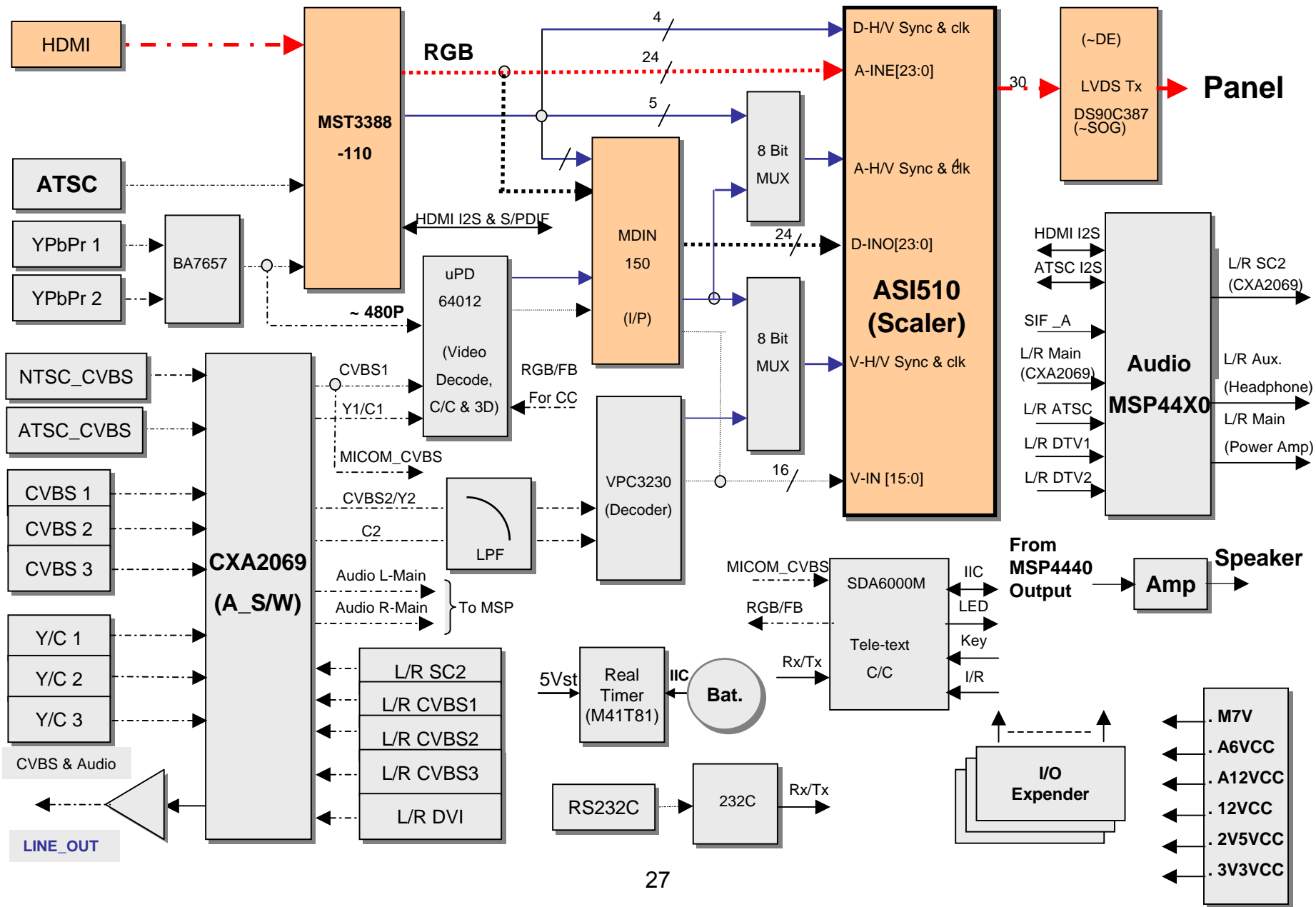
Component Input(Sub)



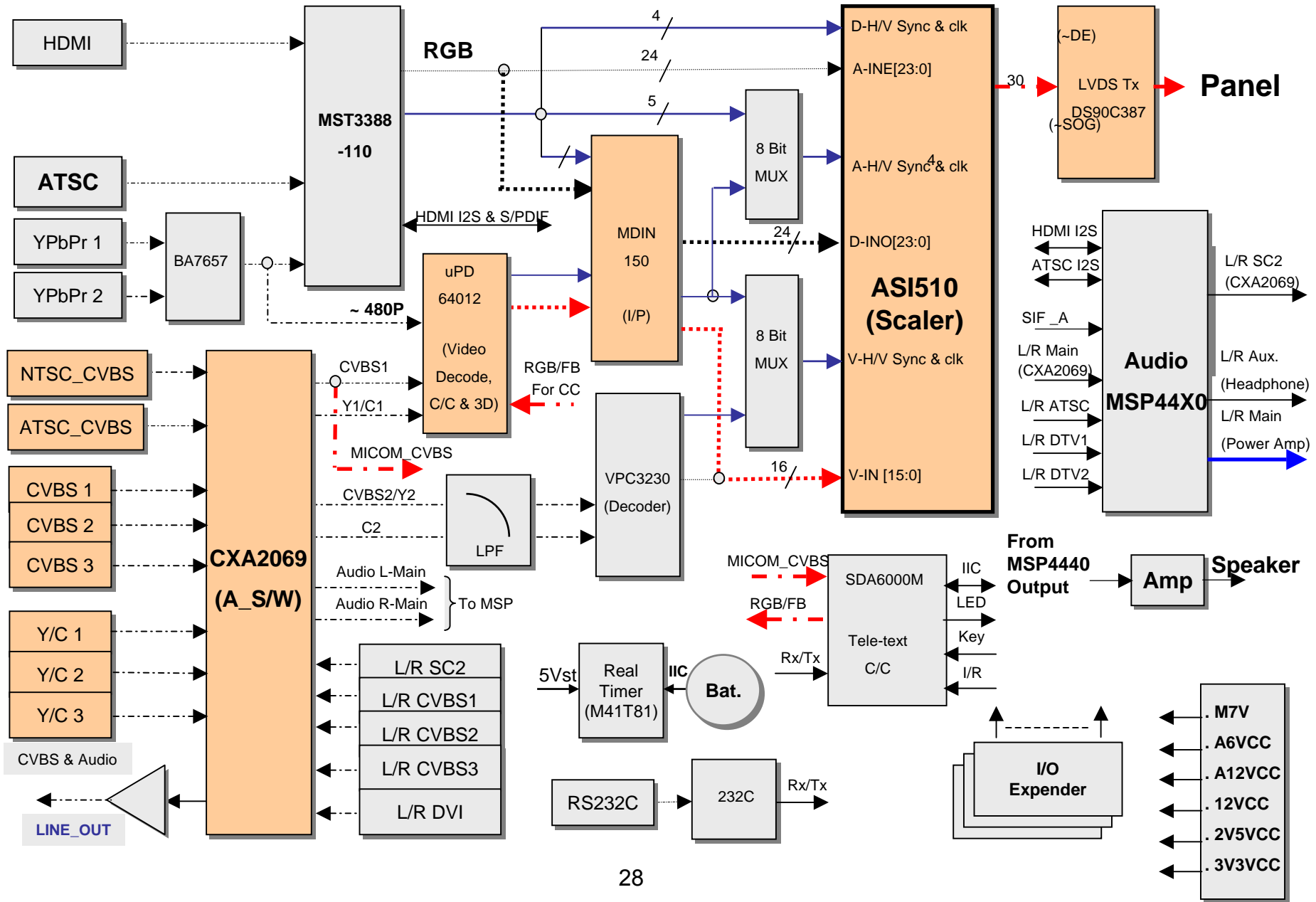
HDMI Input(Main)



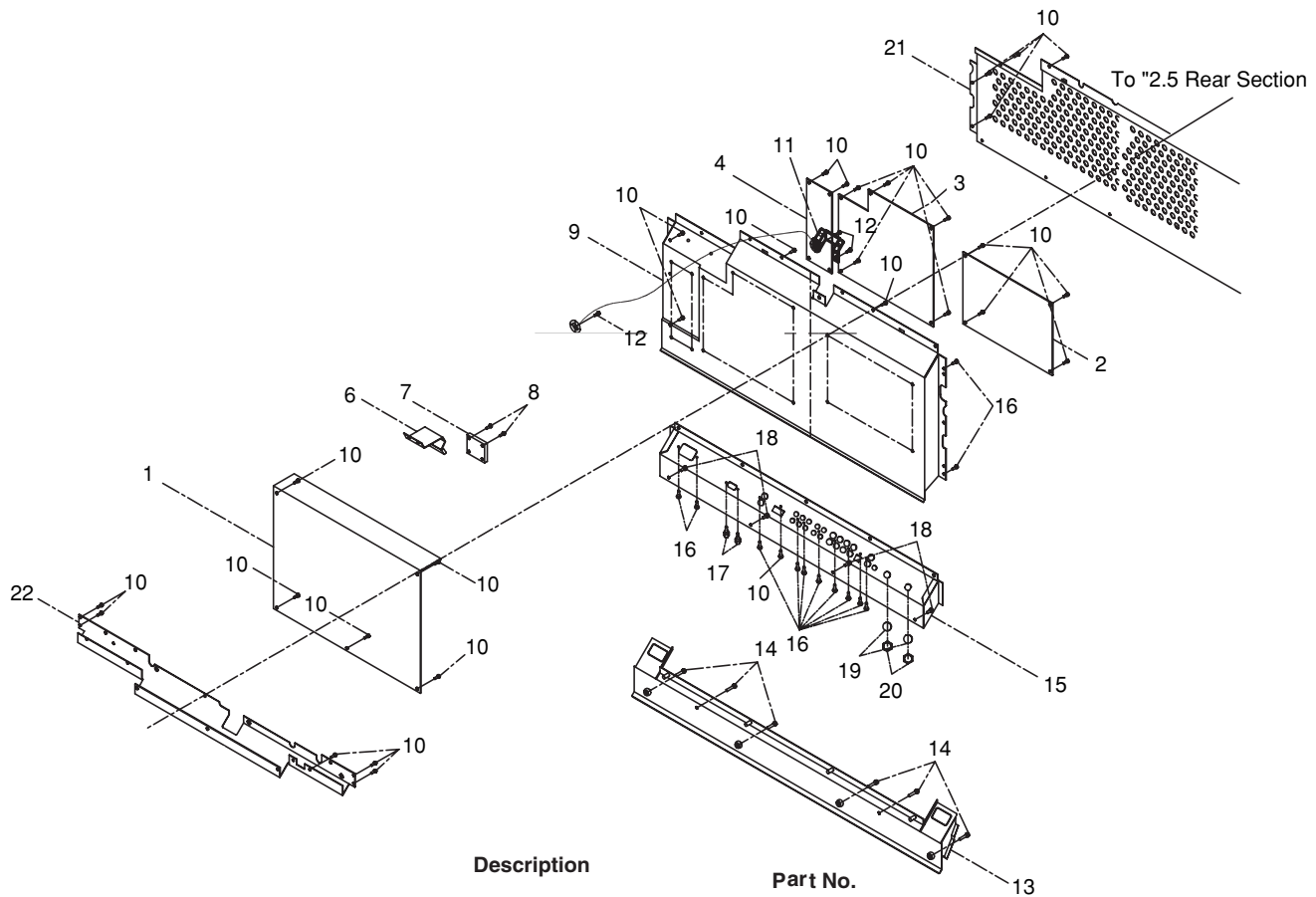
HDMI Input(Sub)



Caption Input



Tuner / Digital / Input & SMPS Power Modules



| Description | Part No. |
|------------------------------|--------------|
| 1 SMPS Assy | 150-2040 |
| 2 DTT_ANALOG Assy | 010-2640 |
| 3 DIGITAL Assy | 010-2741 |
| 4 EMI FILTER PCB Assy | 010-2742 |
| 5 | |
| 6 BRKT FAN-TOP | 30172-01-001 |
| 7 FAN D05X12TL(50x50x10) | 10511-07-001 |
| 8 Screw M3x14, SEMS,ZNW | M1040301415 |
| 9 ASSY SHIELD MAIN | 01434-0010 |
| 10 Screw M3x8, SEMS,ZNW | M1040300815 |
| 11 BRKT N-FILTER | 30173-01-000 |
| 12 Screw M3x8, SEM(E),ZNW | M1033400615 |
| 13 BRKT REAR BOTTOM | 30104-03-001 |
| 14 Screw T4x16,SS,T/T,BH,BLK | M1305401617 |
| 15 BRKT MAIN AV-USA | 30165-02-001 |
| 16 Screw T3x8,2S,T/T,BH,BLK | M1305300817 |
| 17 Screw M3x8,3S,HH,FNI | M1116300805 |
| 18 Screw M4x8,BH,BLK | M1015400817 |
| 19 Wsher (Ø10) | M1231111002 |
| 20 NUT UNF 3/8INCH832 | M1211210002 |
| 21 ASSY SHIELD MAIN TOP | M1305300817 |
| 22 ASSY BRKT MAIN SUPPORTER | 01433-0060 |

ADJUSTMENT

1. At shipment, the unit is adjusted to its best conditions. Normally, it is not necessary to readjust even if an assembly is replaced. If the adjustment is shifted or if it becomes necessary to readjust because of part replacement, etc., perform the adjustment as described below.
2. Any value changed in Service/Factory mode will be stored in memory as soon as it is changed. Before readjustment, take note of the original values for reference in case you need to restore the original settings.
3. Use a stable AC power supply.

ADJUSTMENT OF WHITE BALANCE

Adjustment of White Balance

1. Equipment
 - MIK7255 or Pattern Generator
 - CA-210 Display Color Analyzer
 - Remote Control.
2. Pattern adjustment
 - ADC Calibration : Mik pattern #240
 - Auto-Calibration Mode ; 480p/60Hz
; 720p/60Hz
; 480i/60Hz
 - White Balance adjustment pattern: Mik pattern #446
 - Color coordinate adjustment Mode: 720p/60Hz(Component)
Composite NTSC
3. STEP1: ADC-Calibration
 - 1) At 480p, do Auto-Calibration of ADC-cut off & Gain(1) on Mosaic pattern(ex Mik pattern #240)
 - 2) At 720p/60Hz, repeat 1)
 - 3) At 480i, repeat 1).
4. STEP2: Adjustment of White - Balance
 - 1) At Component input 1. 720p/60Hz, adjust white Balance Mid , High ,Low at pattern Full white 70%
(Ex; Mik pattern #446)
 - 2) At Composite NTSC, repeat 1)
 - 3) White Balance coordination (enter White Balance in Factory Mode)
How to enter; TV/AV -> 0 -> 9 -> 1-> 7 (press buttons one at a time to enter factory mode)
-> ASI510 W/B -> Done (it shows R,G,B adjustment toolbar)
 - (1) Mid : $x=0.283$, $y=0.298$ +/- 0.02 (9300k)
 - (2) High : $x=0.276$, $y=0.283$ +/- 0.02 (11000k)
 - (3) Low : $x=0.313$, $y=0.329$ +/- 0.02 (6500k)

Power Down – Quick Troubleshooting Tip

Plasma Panel shuts down immediately
After power on.

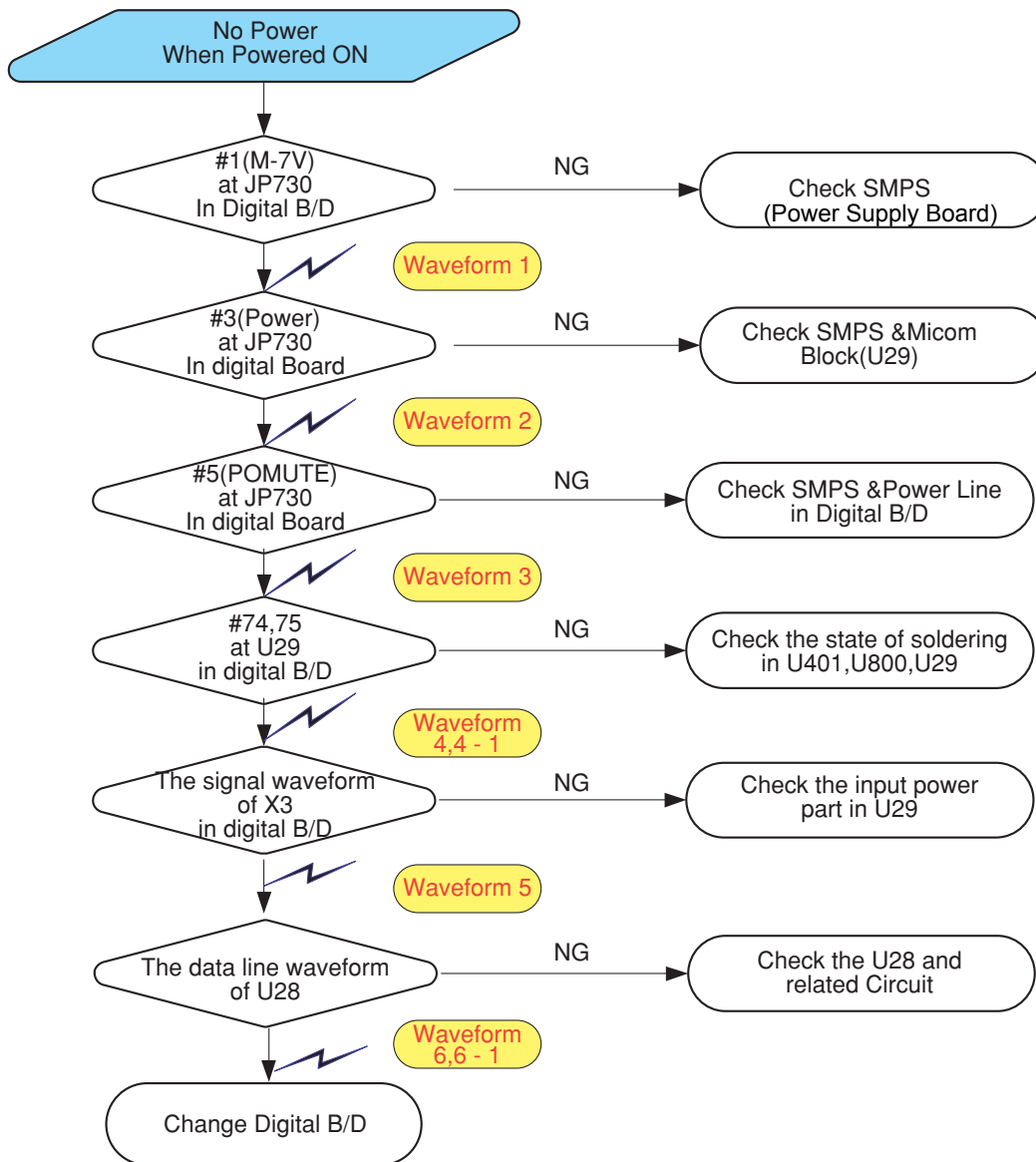
First unplug the two connectors on the SMPS Assembly (the connectors with all brown wires). Next unplug the TMDS connector from the Display to the panel assembly (silver shielded connector).

Try to power the set on in this condition. If the power stays on you will need to troubleshoot the Panel assembly PCB's. If the power still shuts down you need to troubleshoot the Display, DTT, SMPS Audio or Thermal sensor assemblies.

1. No Power

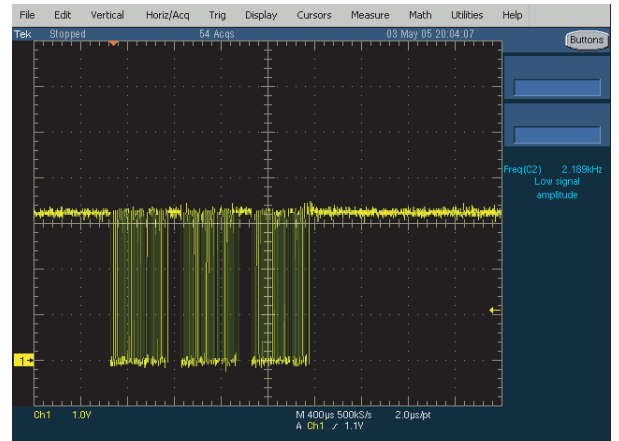
Preliminary Checkpoints

- ❖ Check the condition of the input power & cable connection.
(JP730, JP701 (DTT & Analog), JP709 (Digital), JP230 (AMP))
- ❖ Check the condition of on-board regulators.
- ❖ Check for short circuits between each power terminal and the ground.

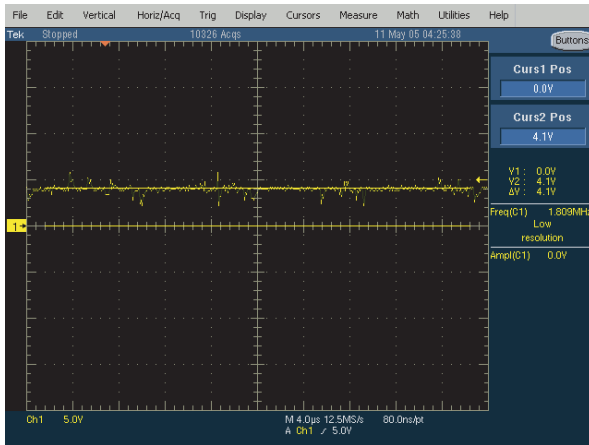




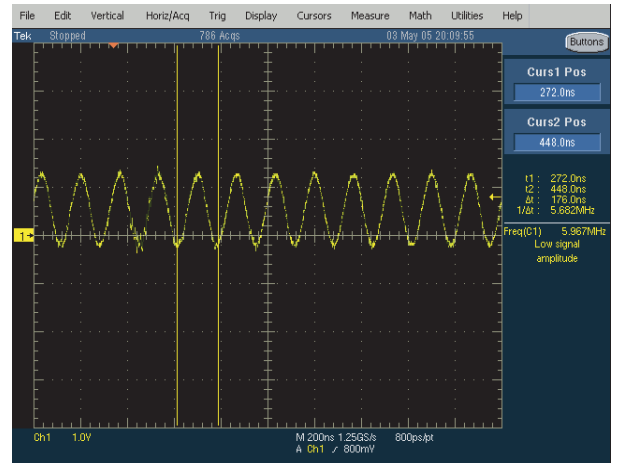
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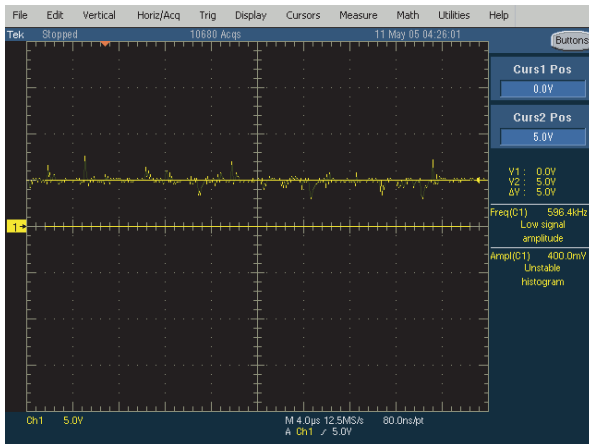
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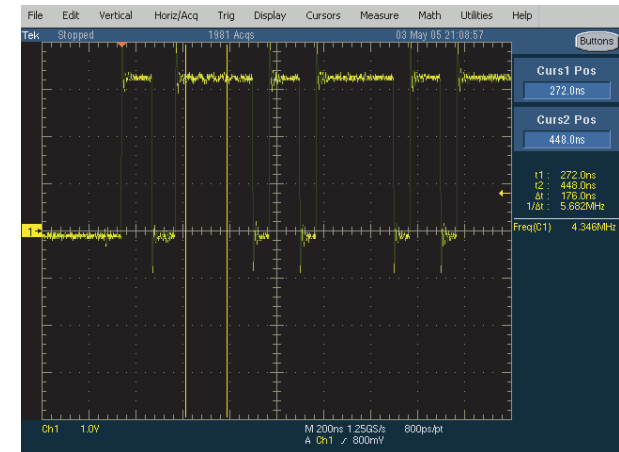
<Waveform 2 >



<Waveform 5 >



<Waveform 3 >

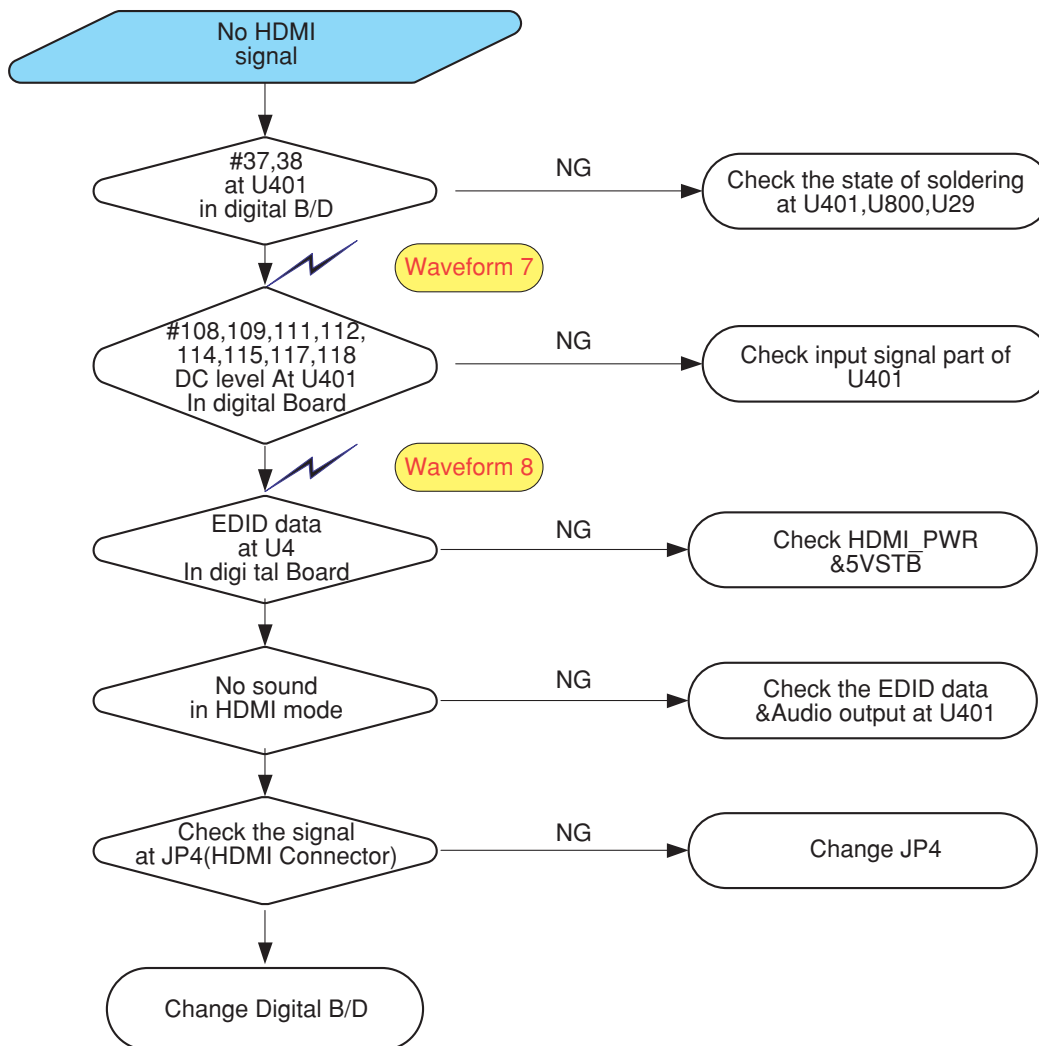


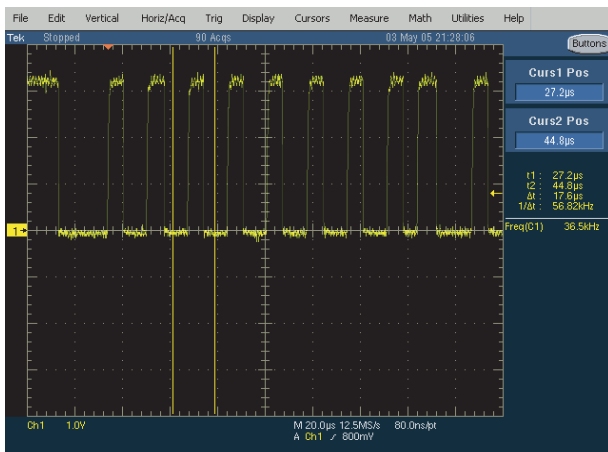
<Waveform 6-1 >

2. No HDMI Signal

Preliminary Checkpoints

- ❖ Check the condition of Connection of the HDMI input Connector
- ❖ Check the condition of Soldering state in HDMI input part.
- ❖ Check for short circuits between each power terminal and the ground.

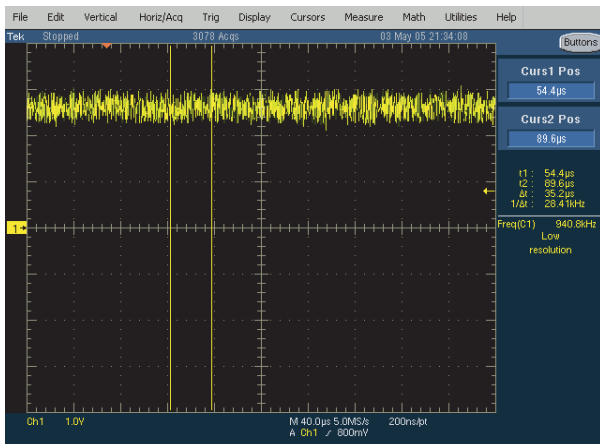




<Waveform 7 SCL >



<Waveform 7 SDA >

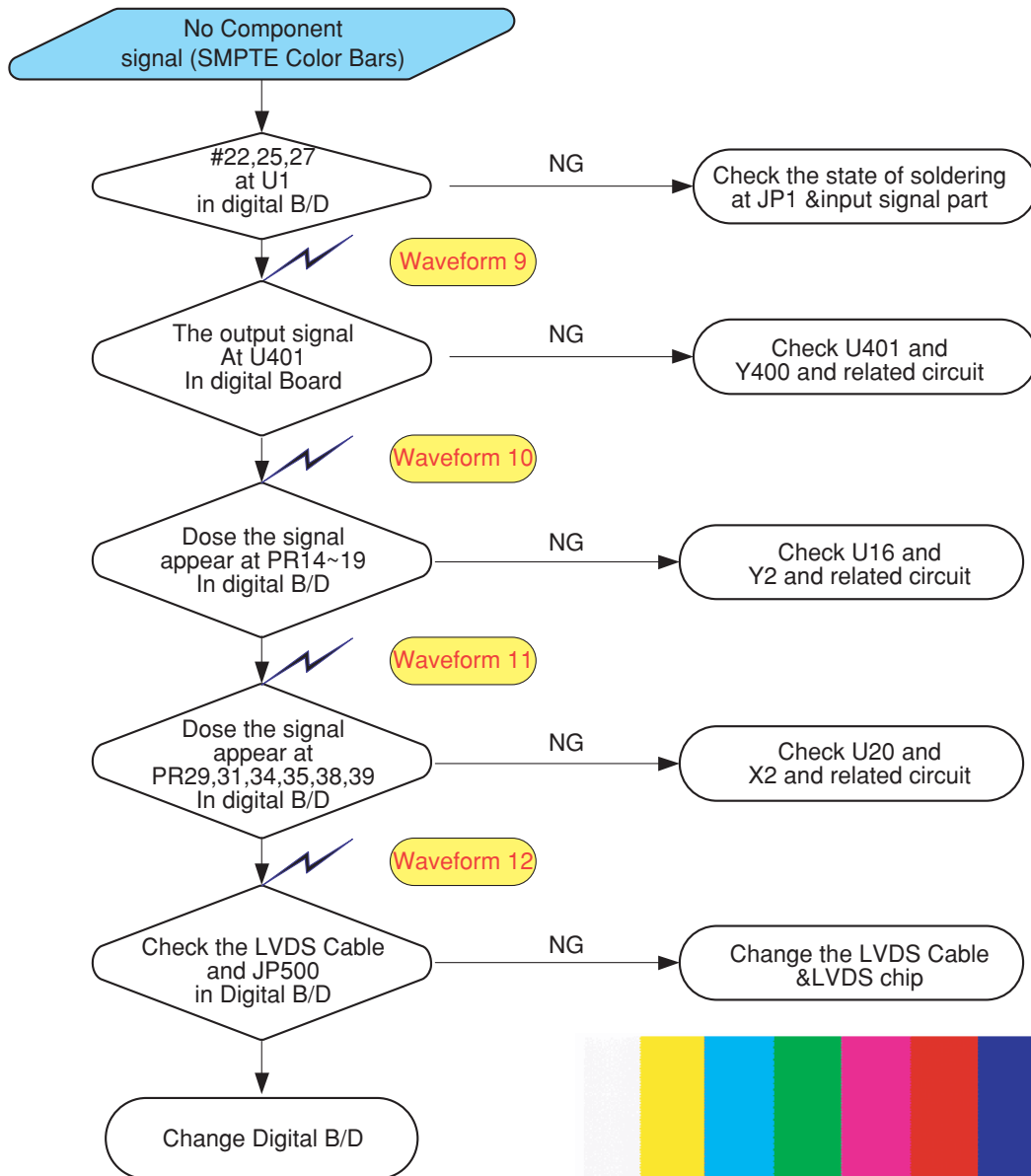


<Waveform 8 >

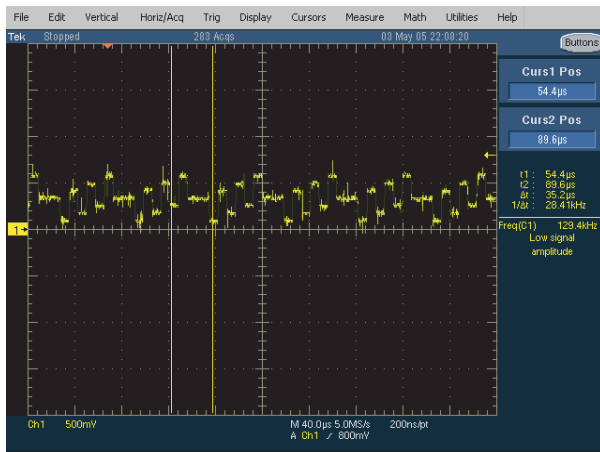
3. No Component Video Signal

Preliminary Checkpoints

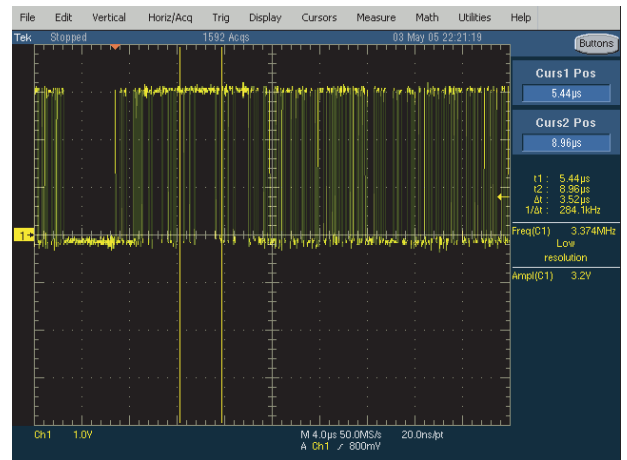
- ❖ Check the condition of connectin of the input component video signal.
- ❖ Check the condition of soldering state in U401
- ❖ Check the short point in signal I line.
- ❖ Check for short circuits between each power terminal and the ground.



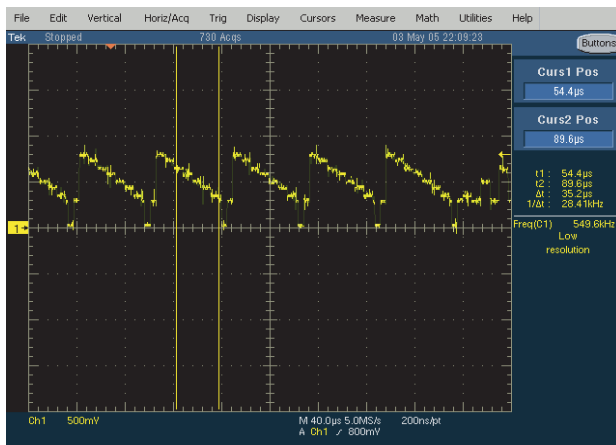
Test Pattern : SMPTE Color Bats



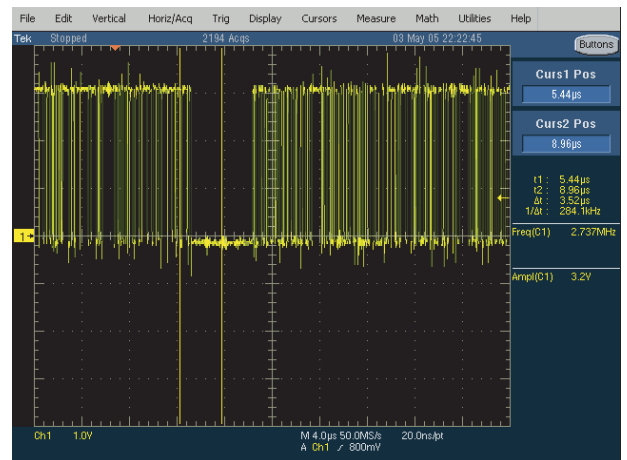
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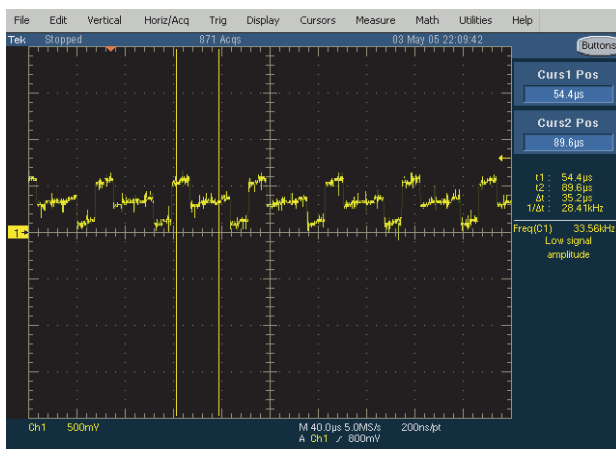
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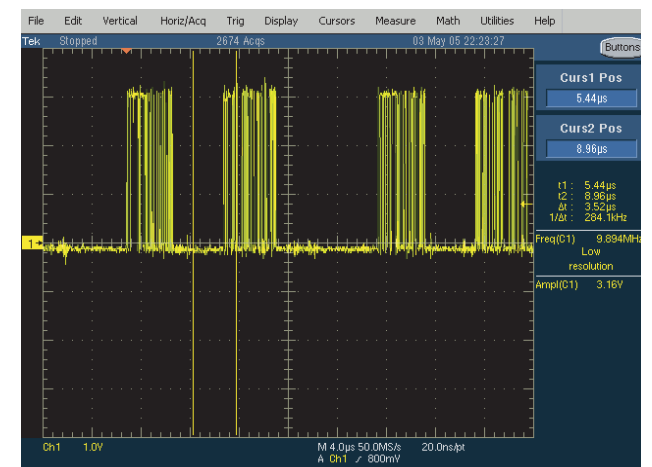
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< Waveform 11 >



< Waveform 9 #27 >

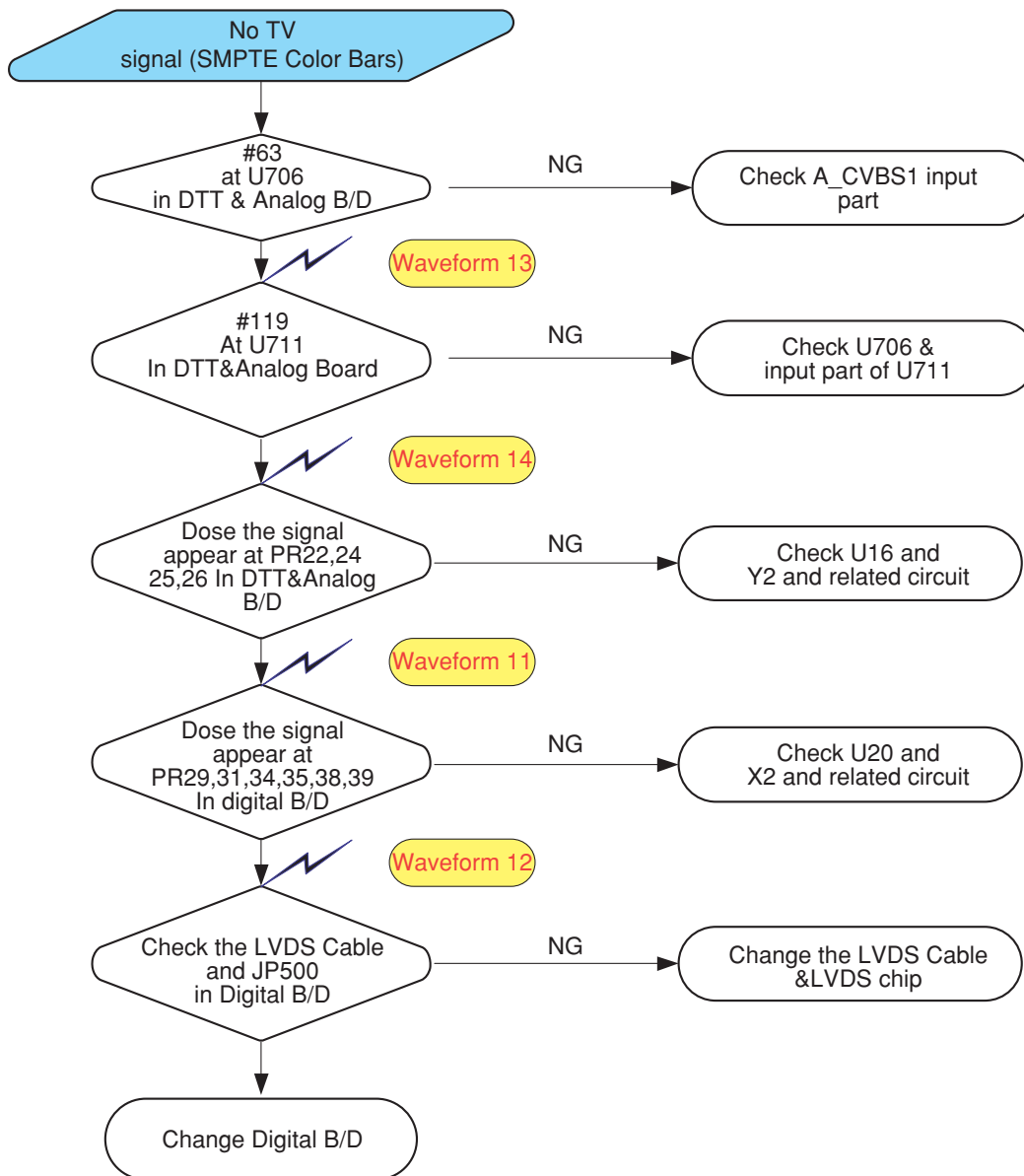


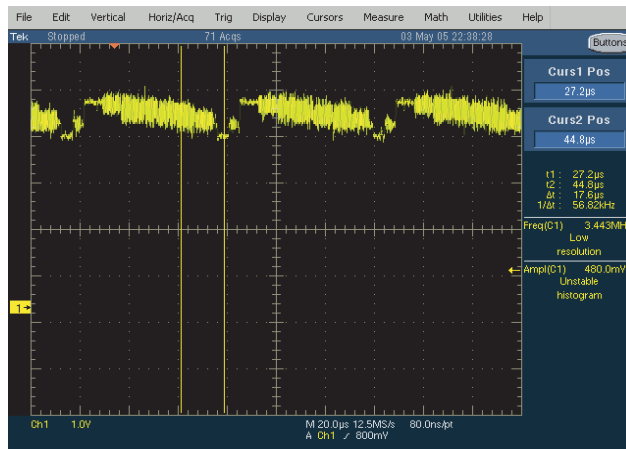
< Waveform 12 >

4. No TV Signal

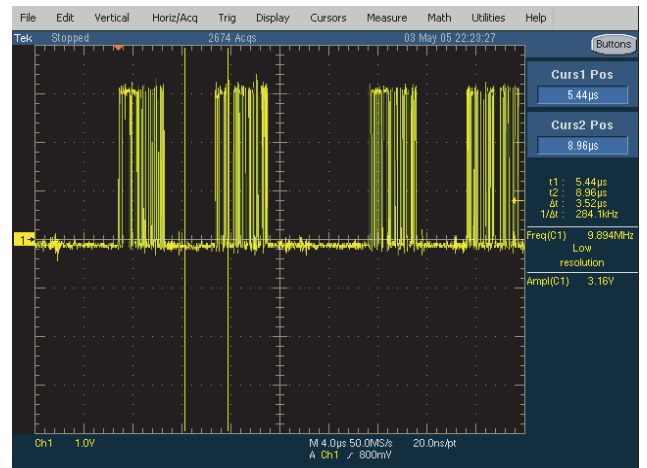
Preliminary Checkpoints

- ❖ Check the condition of connectin of the input TV signal.
- ❖ Check the condition of soldering state in Tuner & input part
- ❖ Check the short point in signal line.
- ❖ Check for short circuits between each power terminal and the ground.

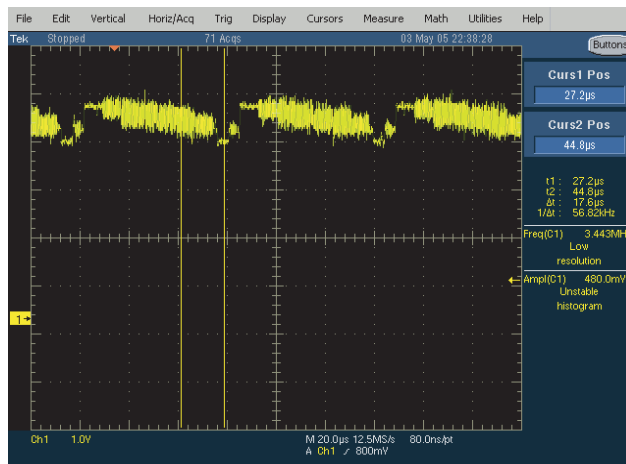




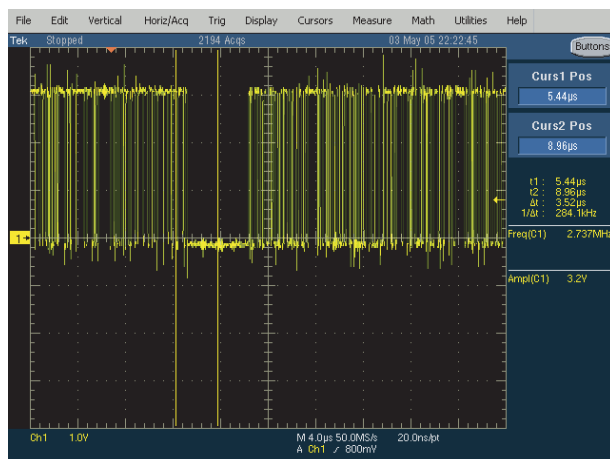
< Waveform 13 >



< Waveform 12 >



< Waveform 14 >

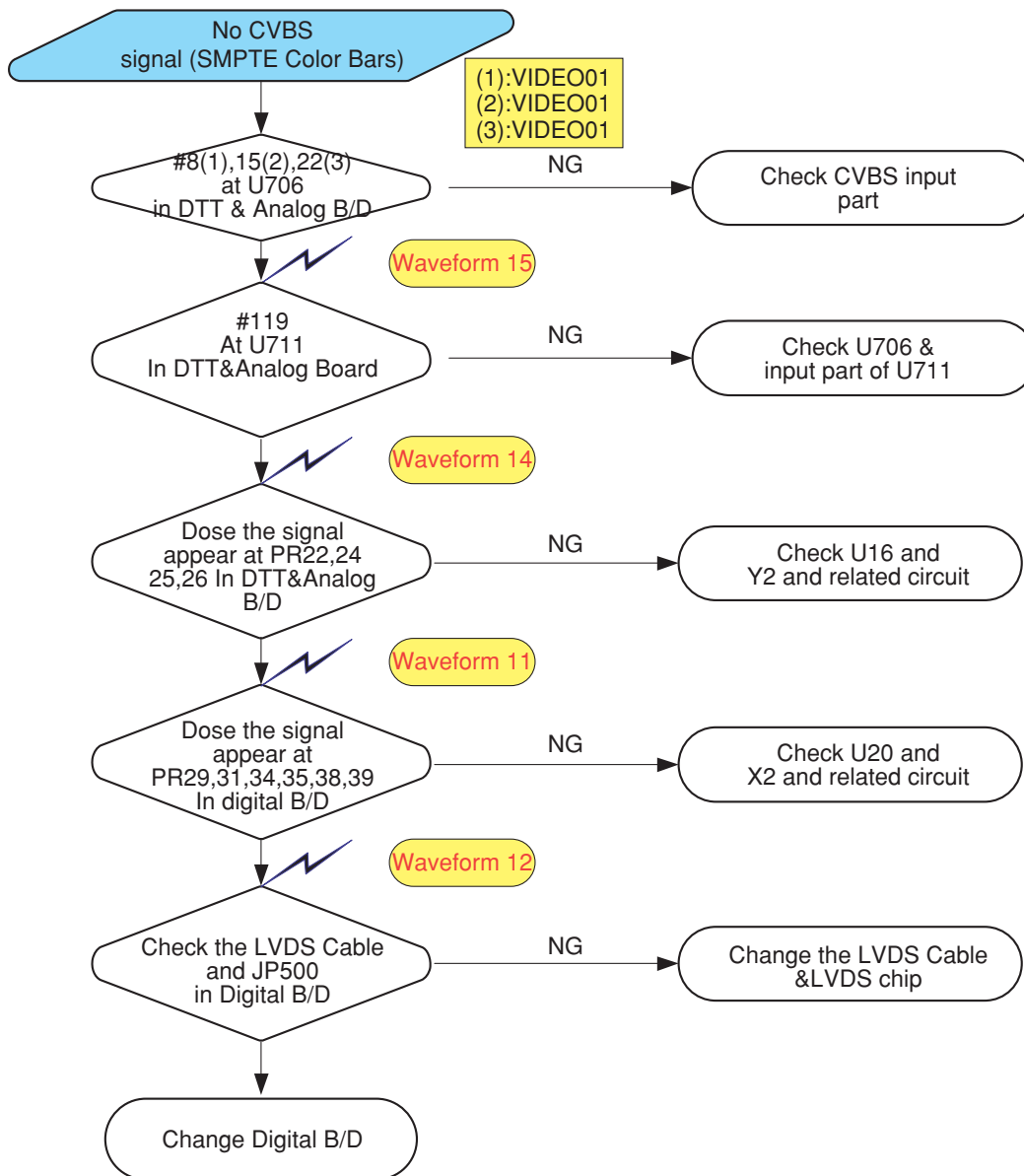


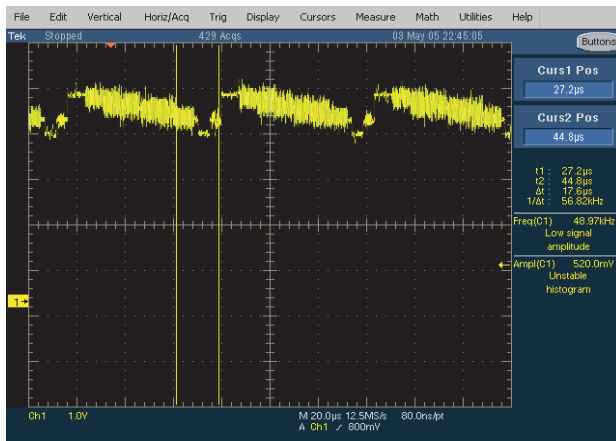
< Waveform 11 >

5. No Video Signal (CVBS)

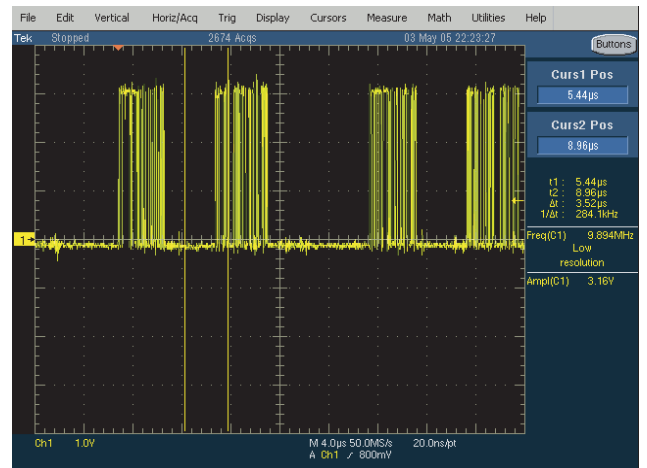
Preliminary Checkpoints

- ❖ Check the condition of connectin of the input CVBS signal.
- ❖ Check the condition of soldering state in CVBS & input part
- ❖ Check the short point in signal line.
- ❖ Check for short circuits between each power terminal and the ground.

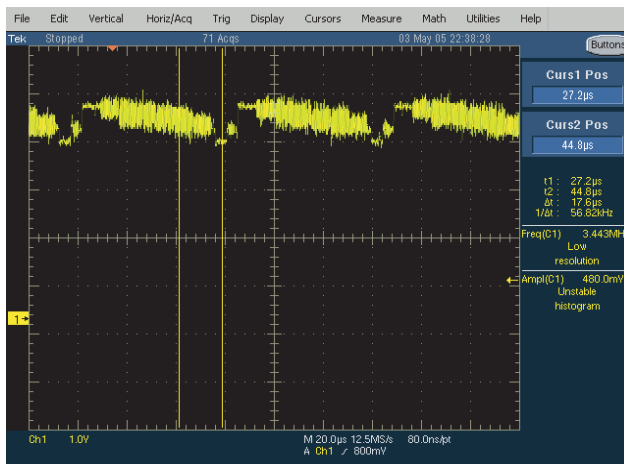




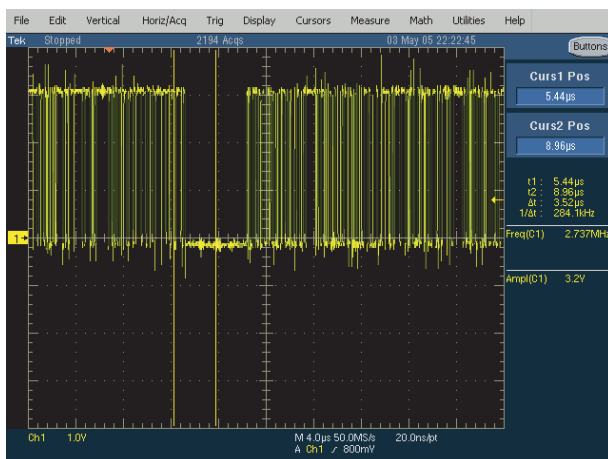
< Waveform 15 >



< Waveform 12 >



< Waveform 14 >

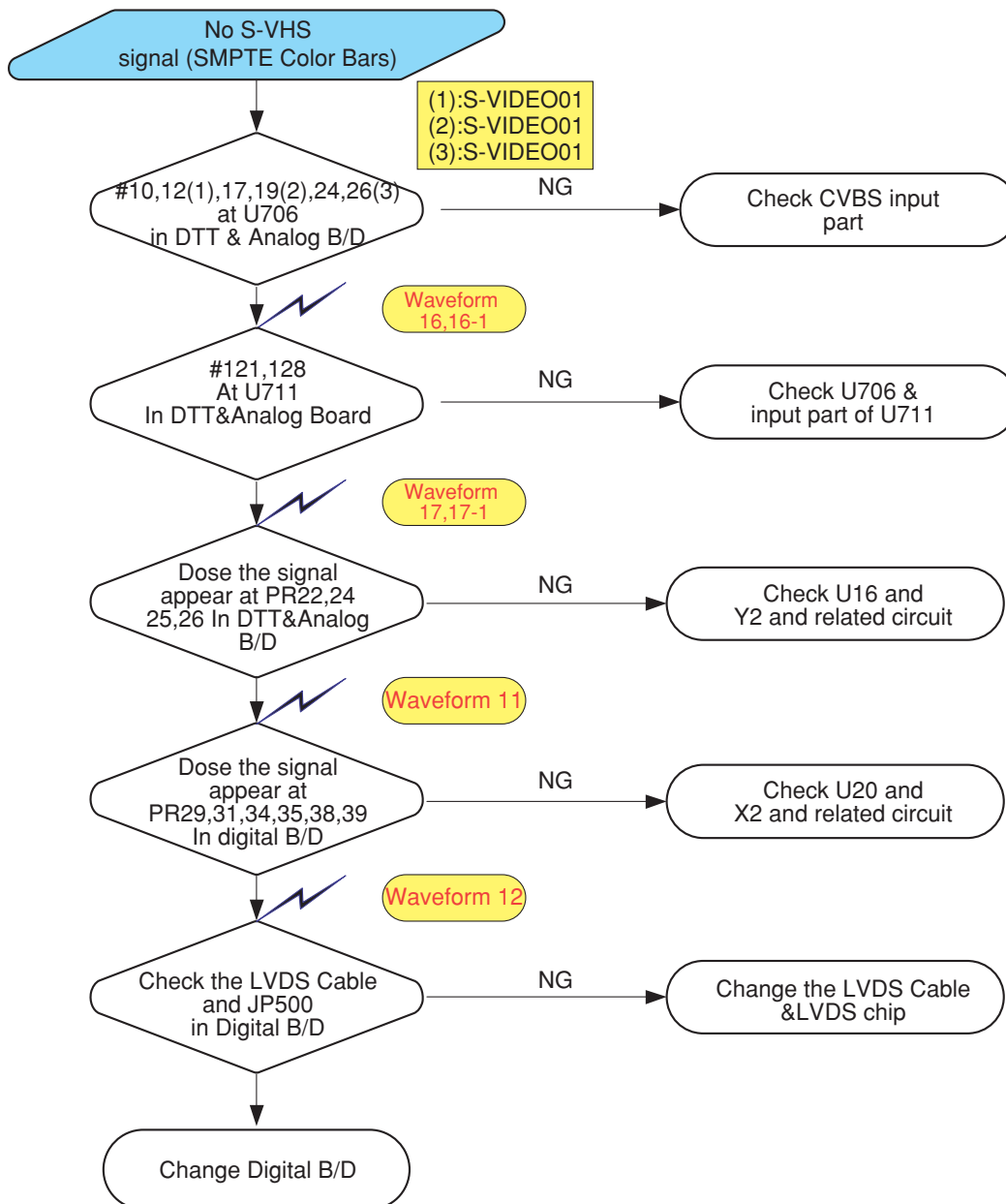


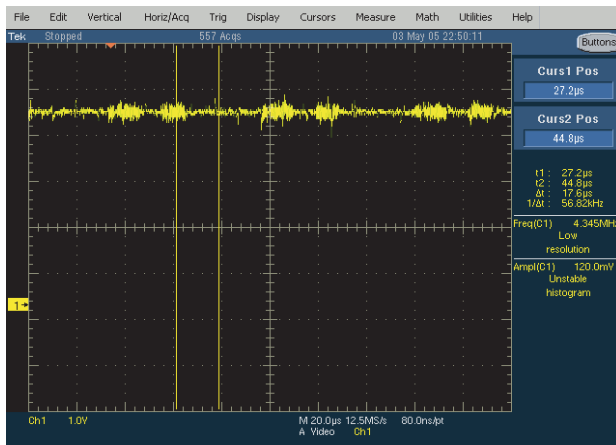
< Waveform 11 >

6. No Video Signal (S-VHS)

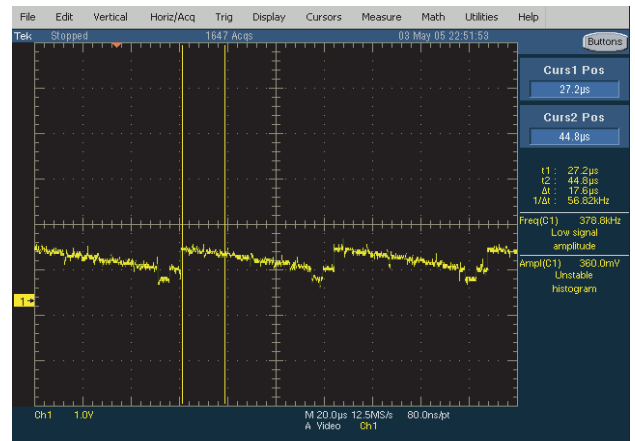
Preliminary Checkpoints

- ❖ Check the condition of connectin of the input S-VHS signal.
- ❖ Check the condition of soldering state in S-VHS & input part
- ❖ Check the short poi nt in signal line.
- ❖ Check for short circuits between each power terminal and the ground.

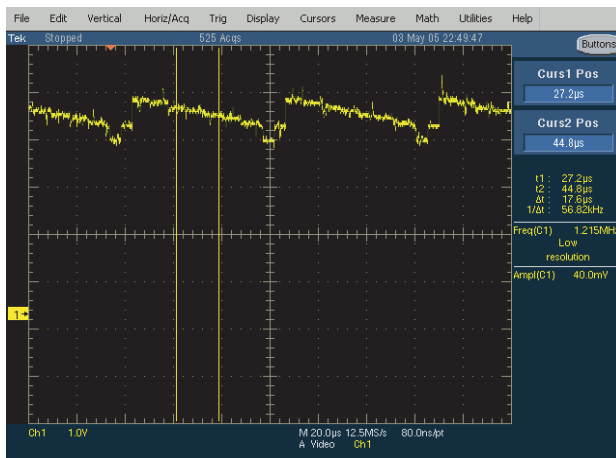




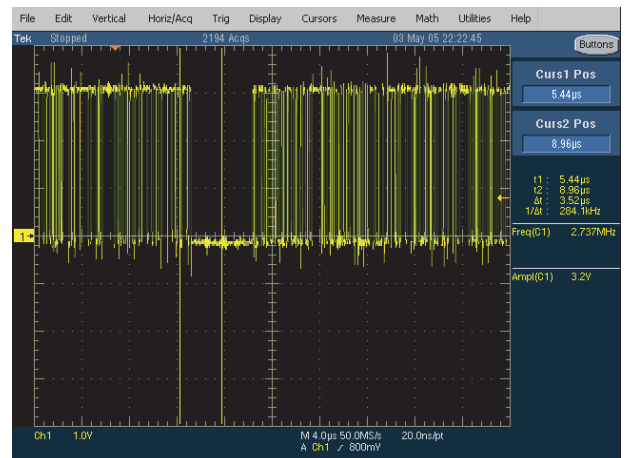
< Waveform 16 C >



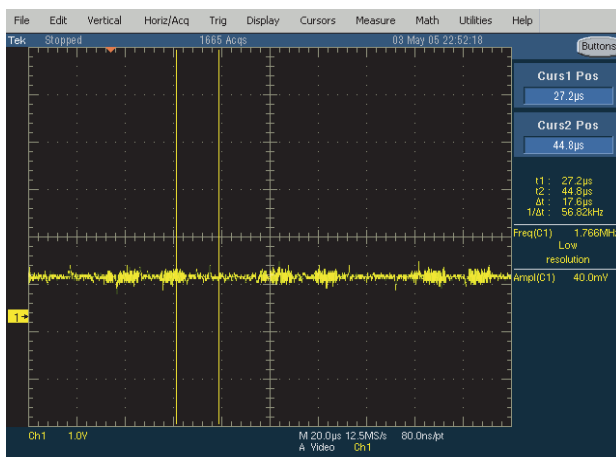
< Waveform 17 Y >



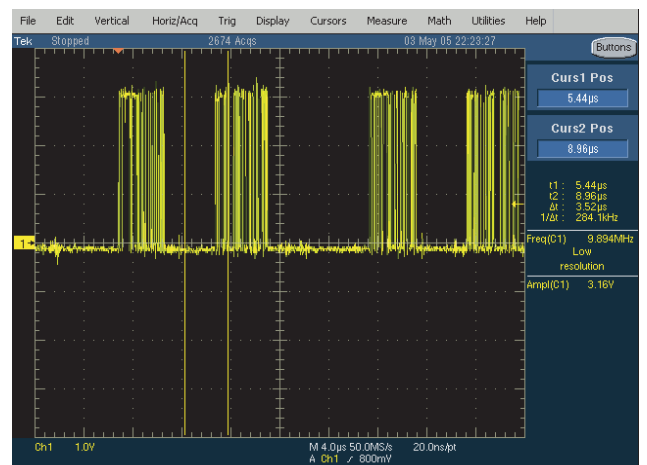
< Waveform 16 Y >



< Waveform 12 >



< Waveform 17 C >

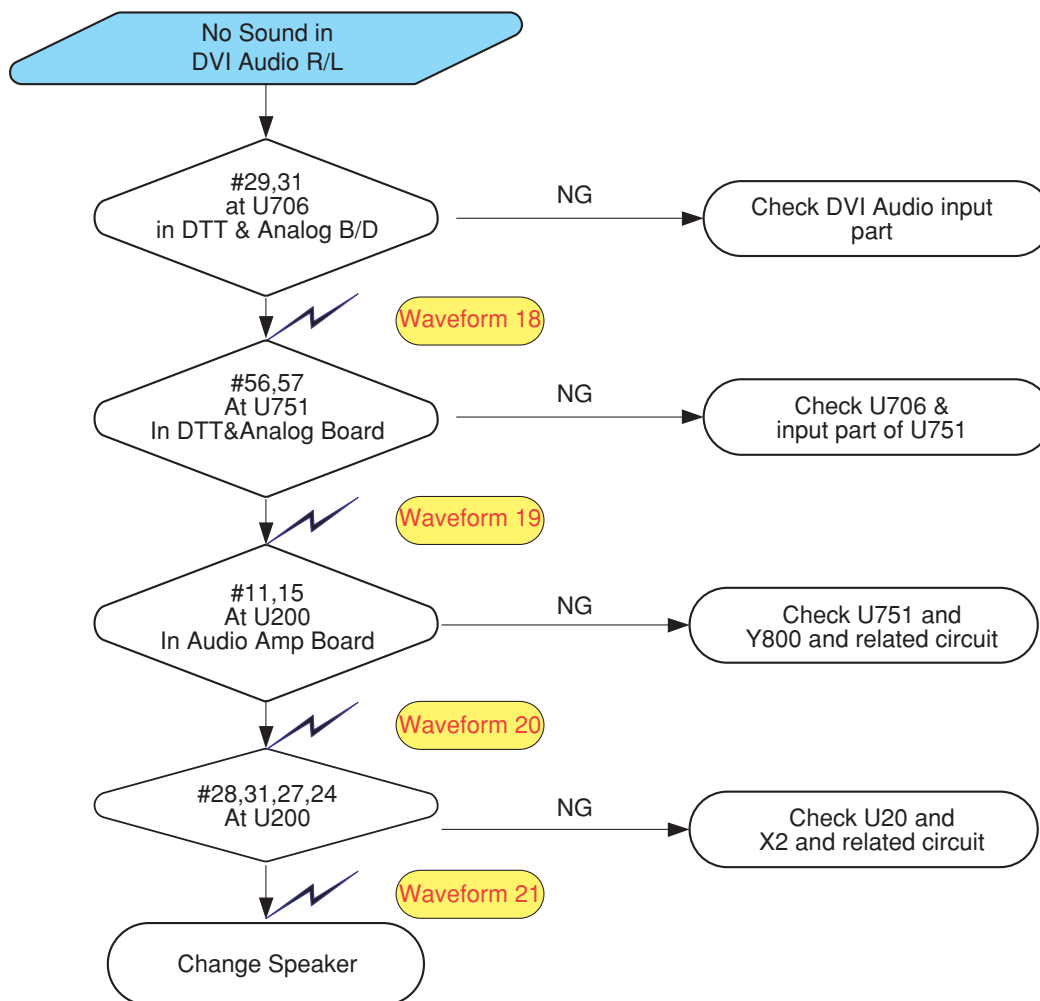


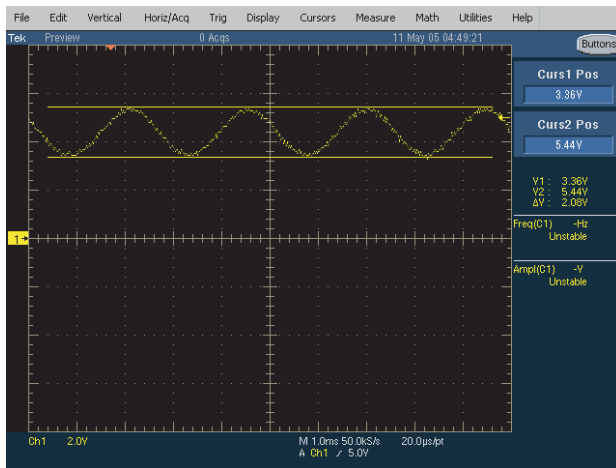
< Waveform 12 >

7. No Sound DVI Audio (Sine wave input)

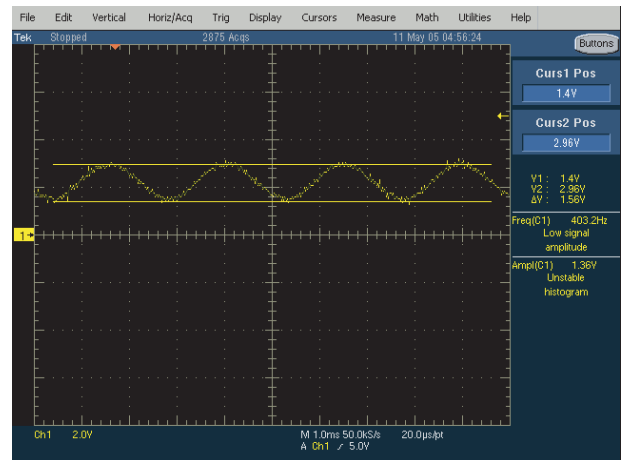
Preliminary Checkpoints

- ❖ Check the condition of connectin of the input DVI Audio R/L.
- ❖ Check the condition of soldering state in DVI Audio R/L & input part
- ❖ Check the short point in signal line.
- ❖ Check for short circuits between each power terminal and the ground.

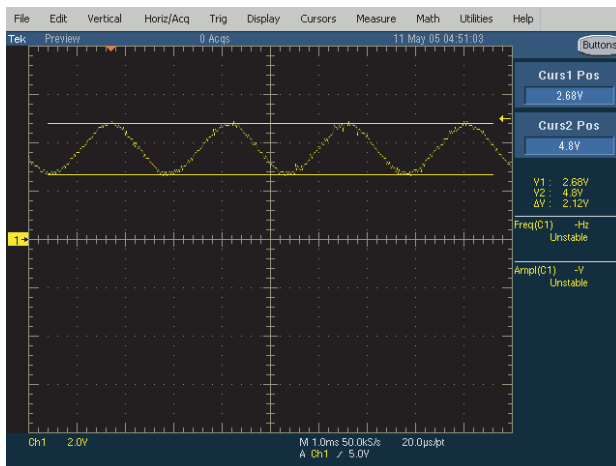




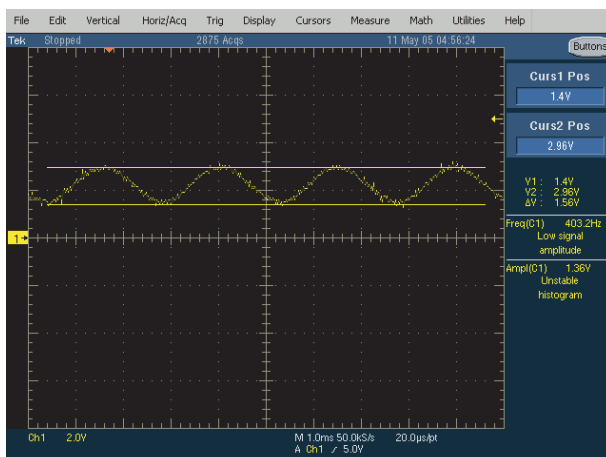
< Waveform 18 >



< Waveform 21 >



< Waveform 19 >

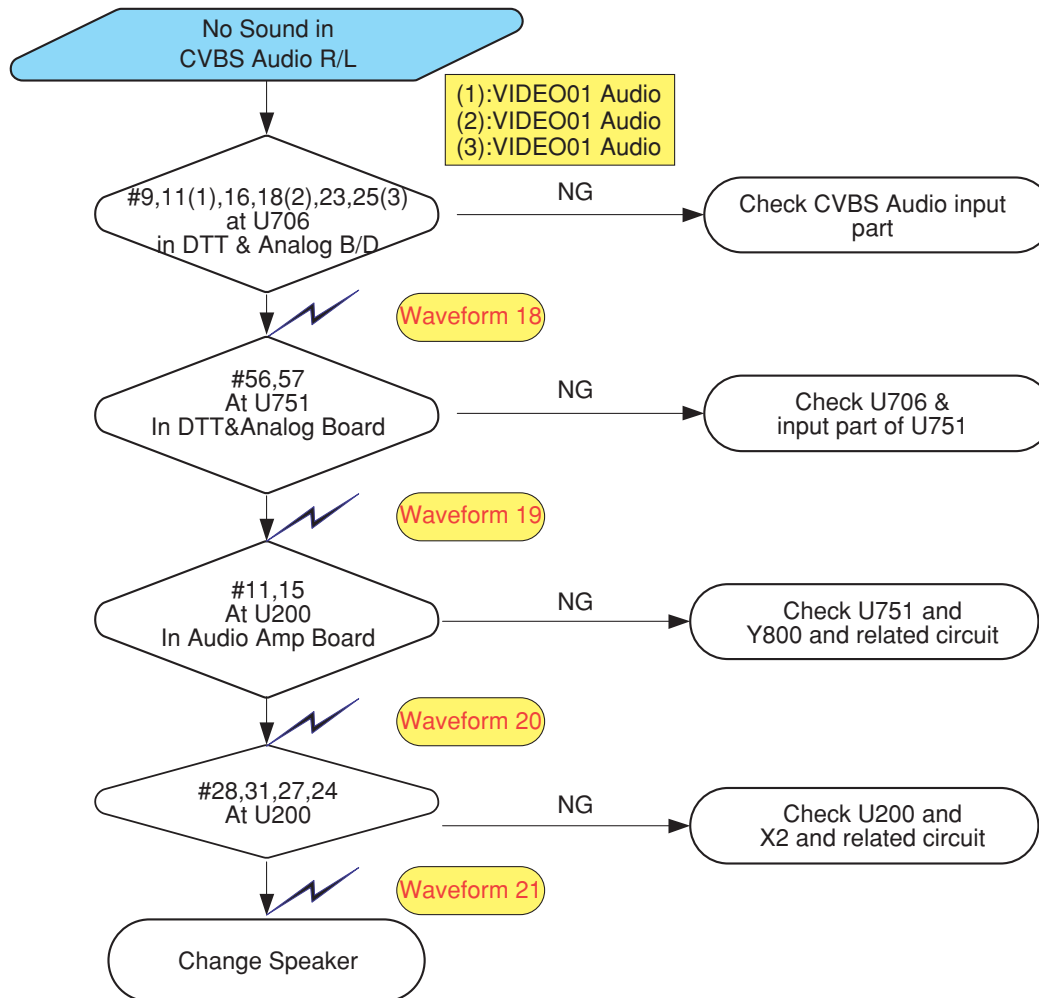


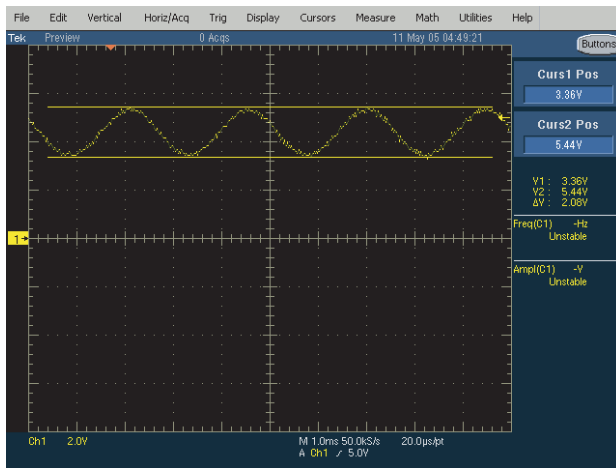
< Waveform 20 >

8. No Sound in CVBS (Sine wave input)

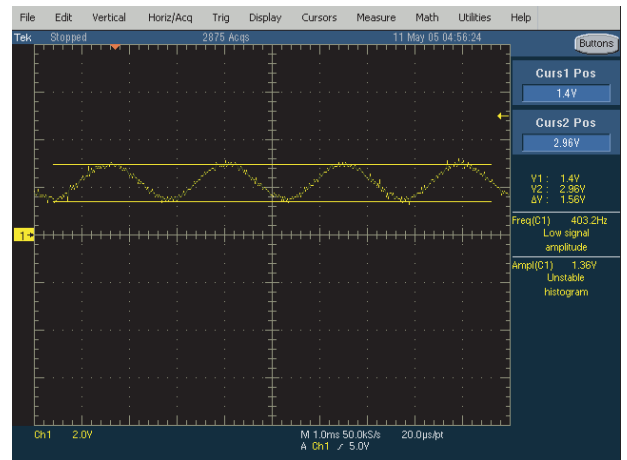
Preliminary Checkpoints

- ❖ Check the condition of connectin of the input CVBS Audio R/L.
- ❖ Check the condition of soldering state in CVBS Audio R/L & input part
- ❖ Check the short point in signal line.
- ❖ Check for short circuits between each power terminal and the ground.

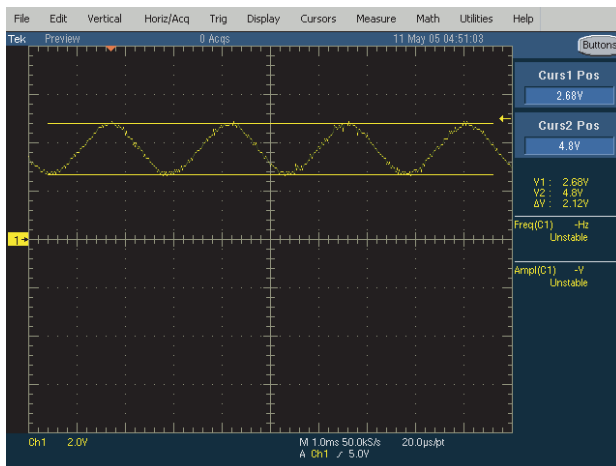




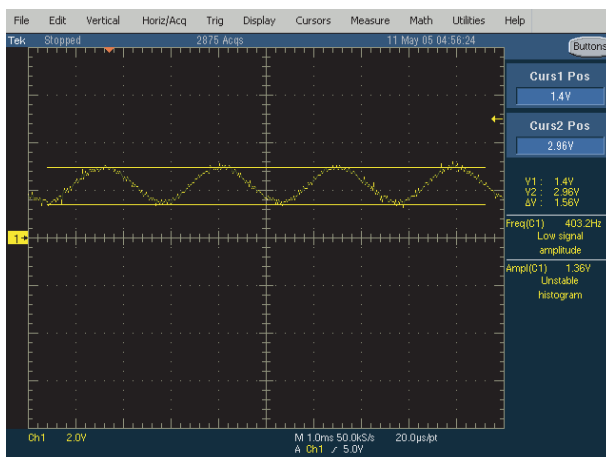
< Waveform 18 >



< Waveform 21 >



< Waveform 19 >

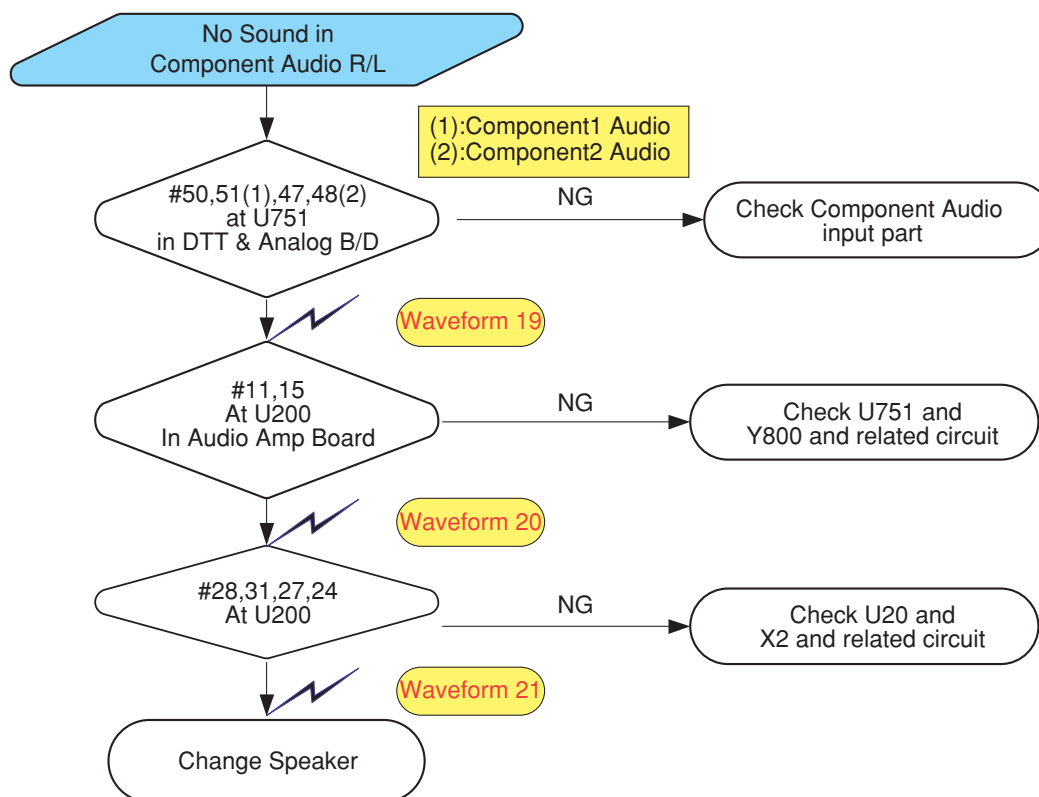


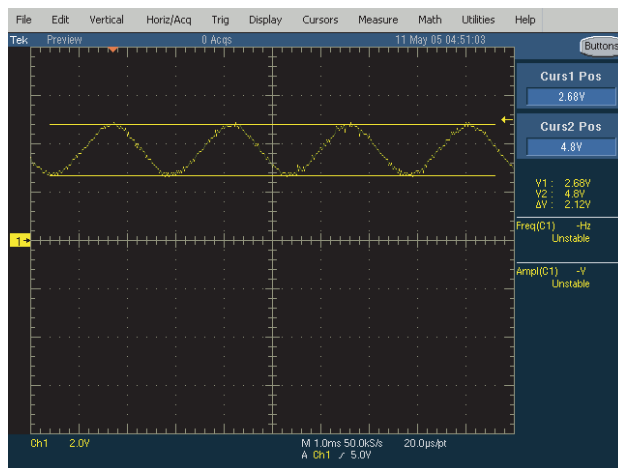
< Waveform 20 >

9. No Audio in Component Input (Sine wave input)

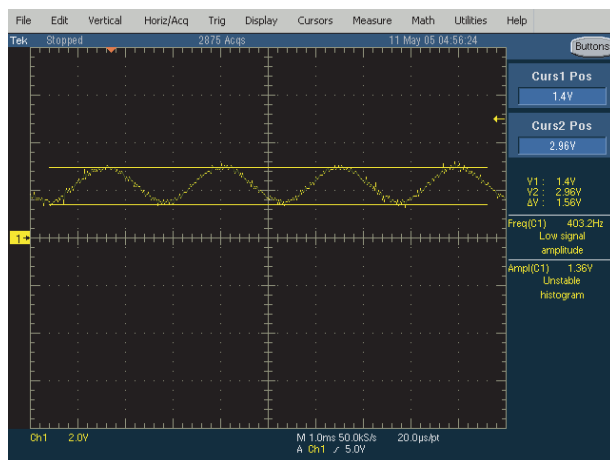
Preliminary Checkpoints

- ❖ Check the condition of connectin of the input Component Audio R/L.
- ❖ Check the condition of soldering state in Component Audio R/L & input part
- ❖ Check the short point in signal line.
- ❖ Check for short circuits between each power terminal and the ground.

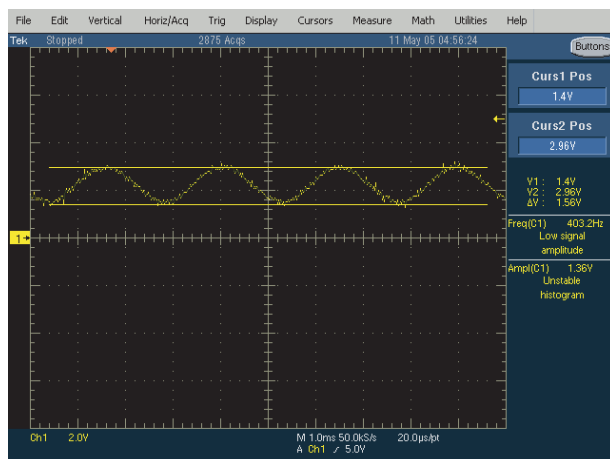




< Waveform 19 >



< Waveform 20 >

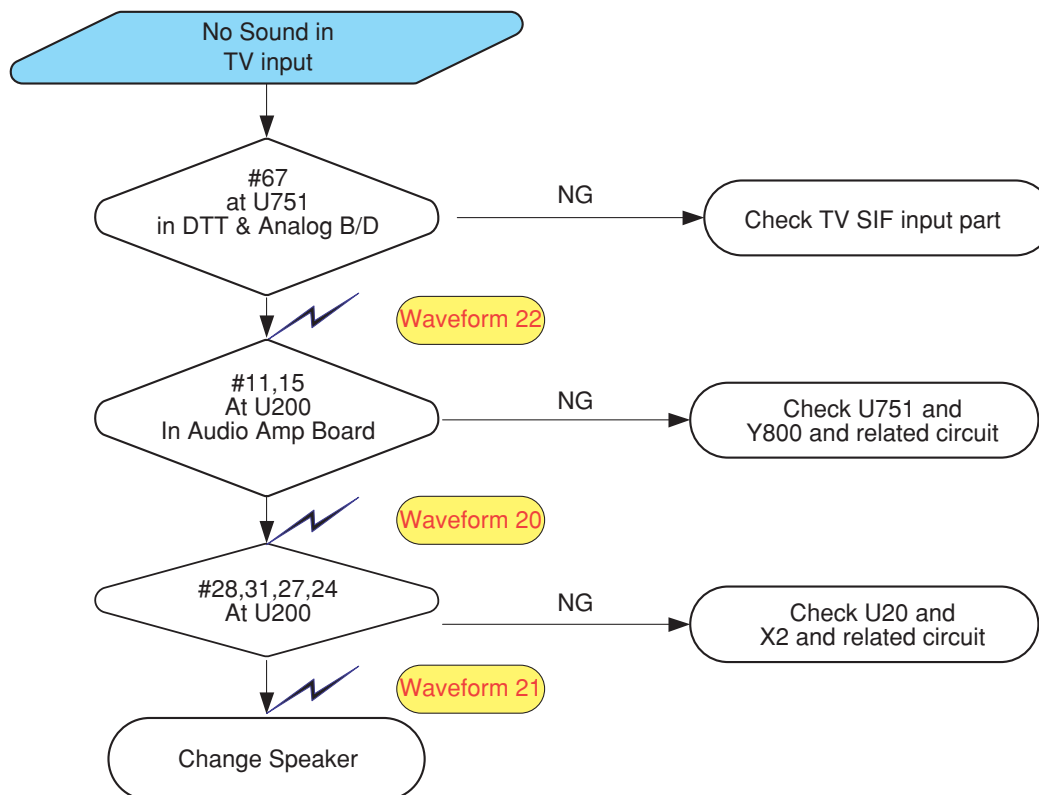


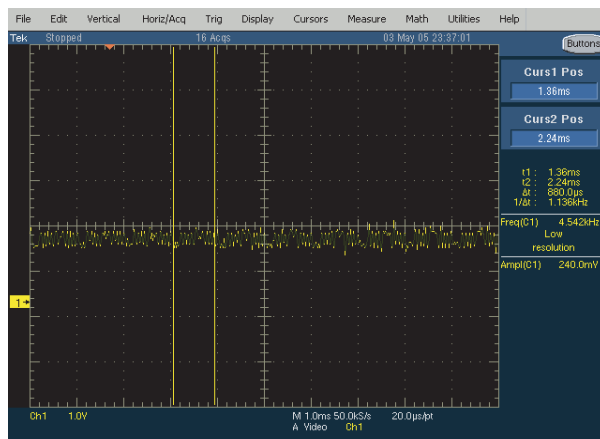
< Waveform 21 >

10. No TV Sound (Sine wave input)

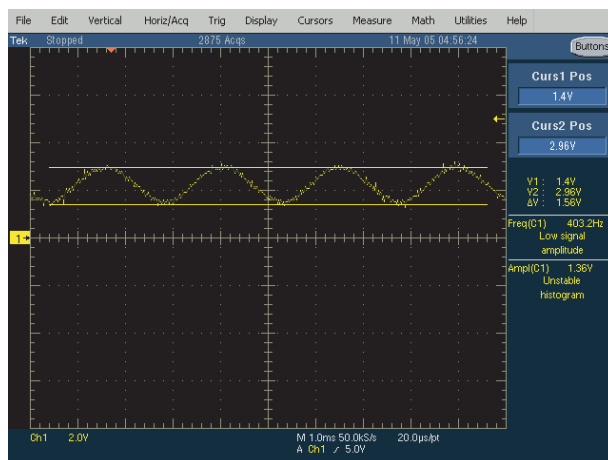
Preliminary Checkpoints

- ❖ Check the condition of connectin of the input TV SIF.
- ❖ Check the condition of soldering state in TV SIF input part.
- ❖ Check the short point in signal line.
- ❖ Check for short circuits between each power terminal and the ground.

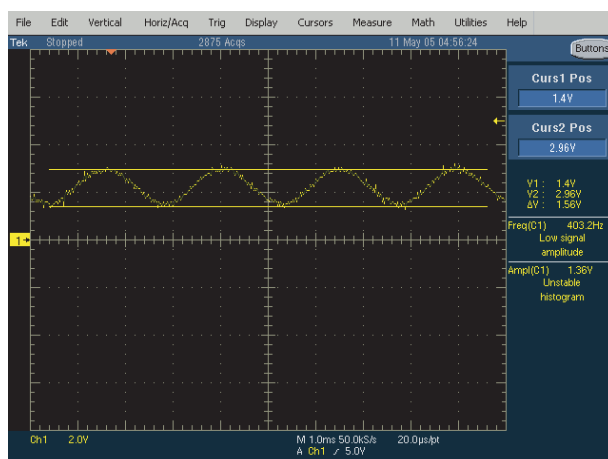




< Waveform 22 >



< Waveform 20 >

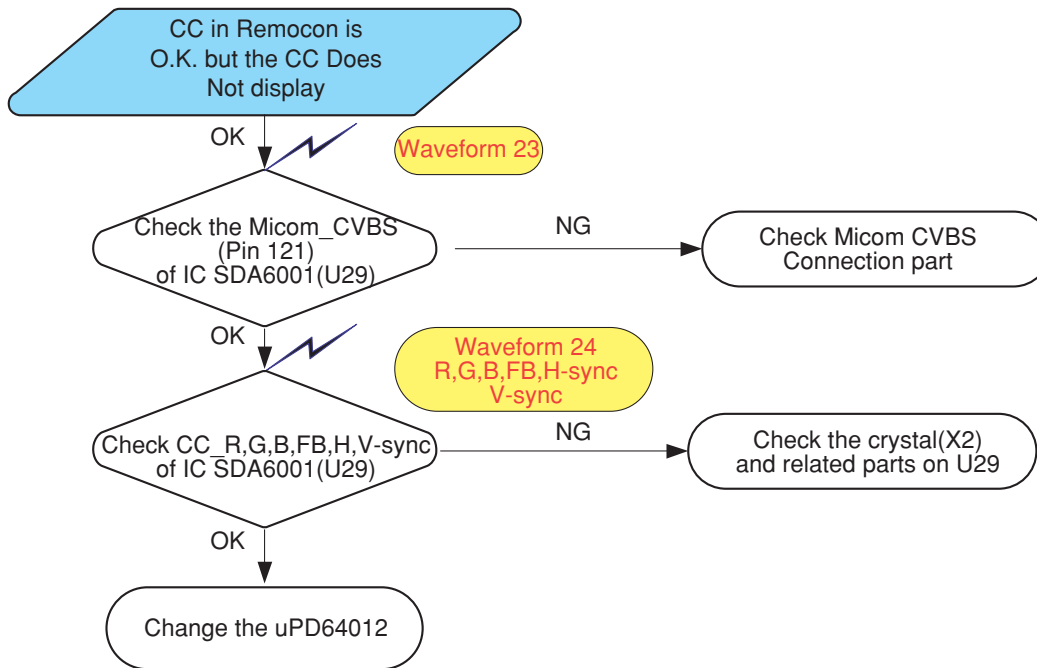


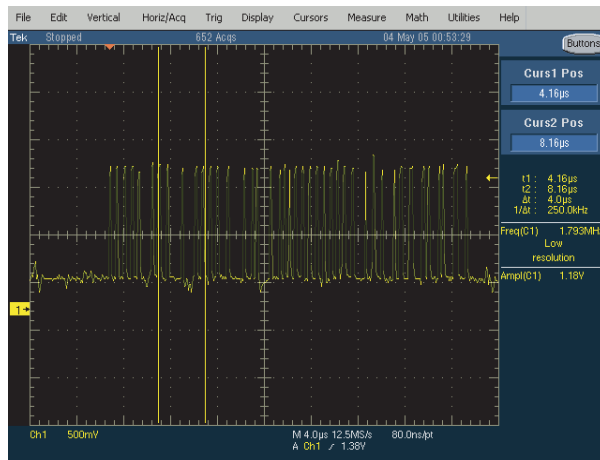
< Waveform 21 >

11. No Caption

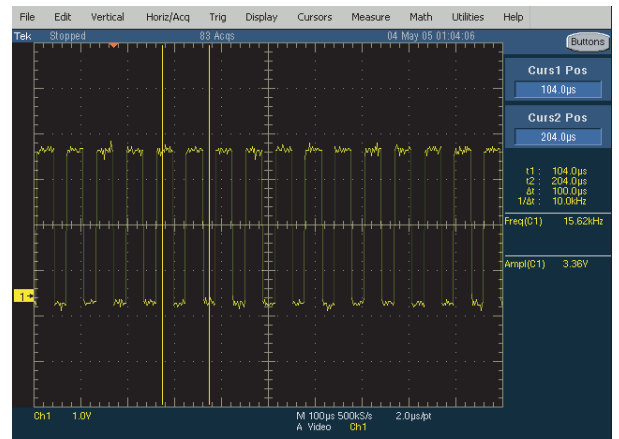
Preliminary Checkpoints

- ❖ Check the back Soldering state in 96 pin connector(JP12(Digital),JP701(DTT&Analog))
- ❖ Check the CC_RD,GD,BD,FB,VD,HD signal in I C.
- ❖ Check the I2C between Micom and uPD64012 or EEPROM.
- ❖ Check the Flash Memory or SDRAM.

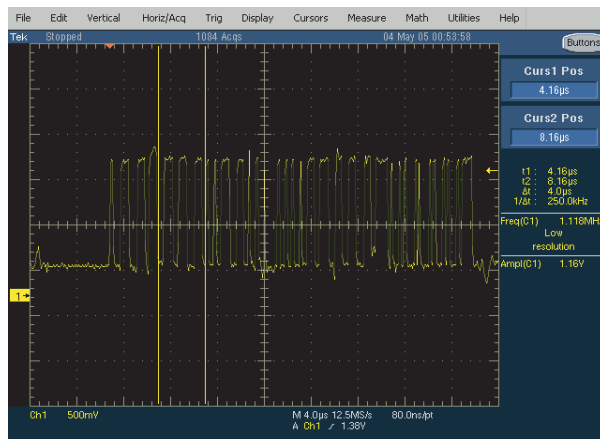




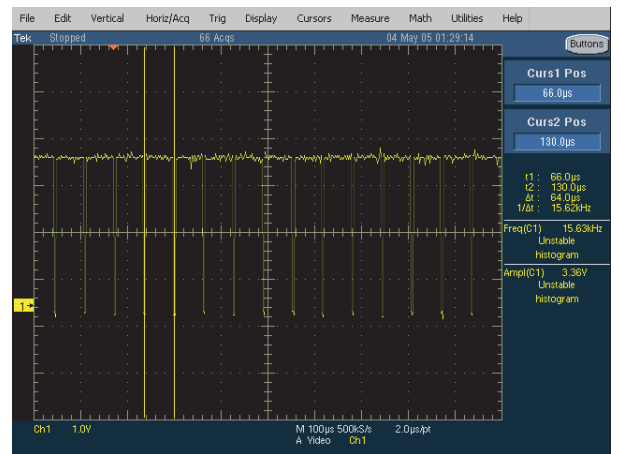
< Waveform 24 R >



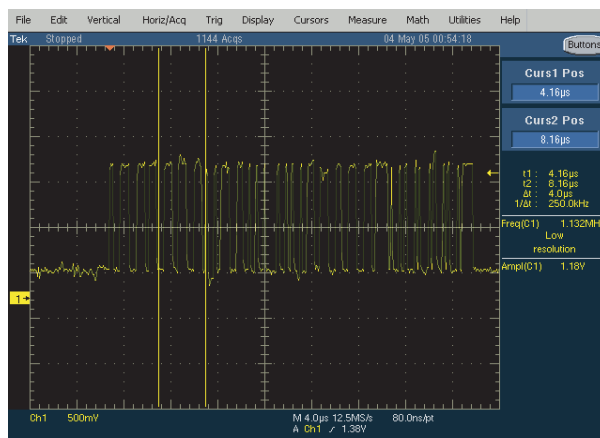
< Waveform 24 FB >



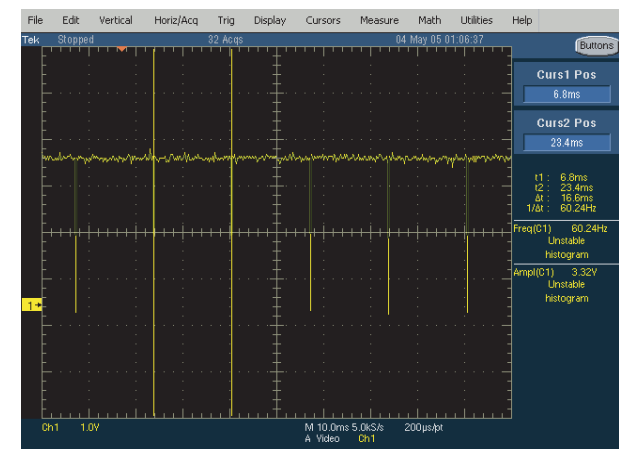
< Waveform 24 G >



< Waveform 24 H-sync >



< Waveform 24 B >



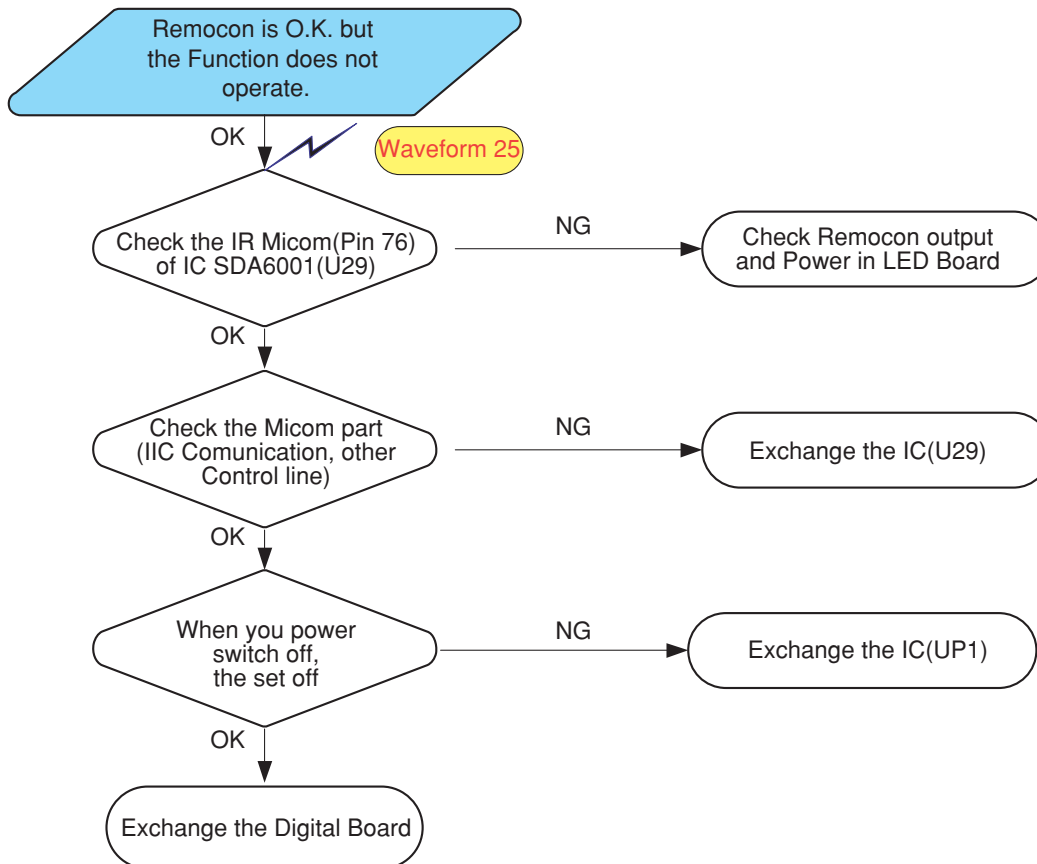
< Waveform 24 V-sync >

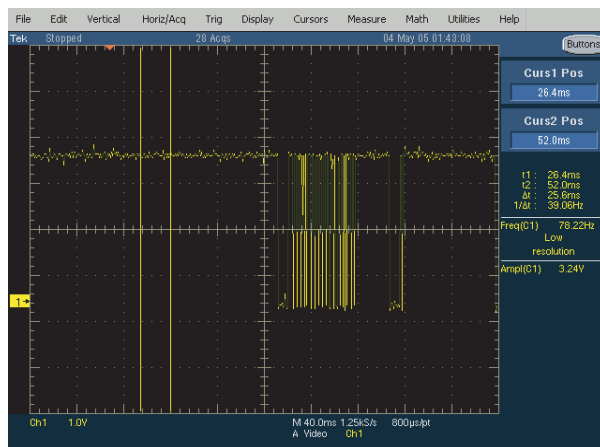
12. Remocon

Remocon switch push but the key does not function

Preliminary Checkpoints

- ❖ Check the Solder state and pin of Connector JP10
- ❖ Check the Solder state in LED Board.
- ❖ Check the I2C between Micom and EEPROM.
- ❖ Check the Flash Memory or SDRAM.





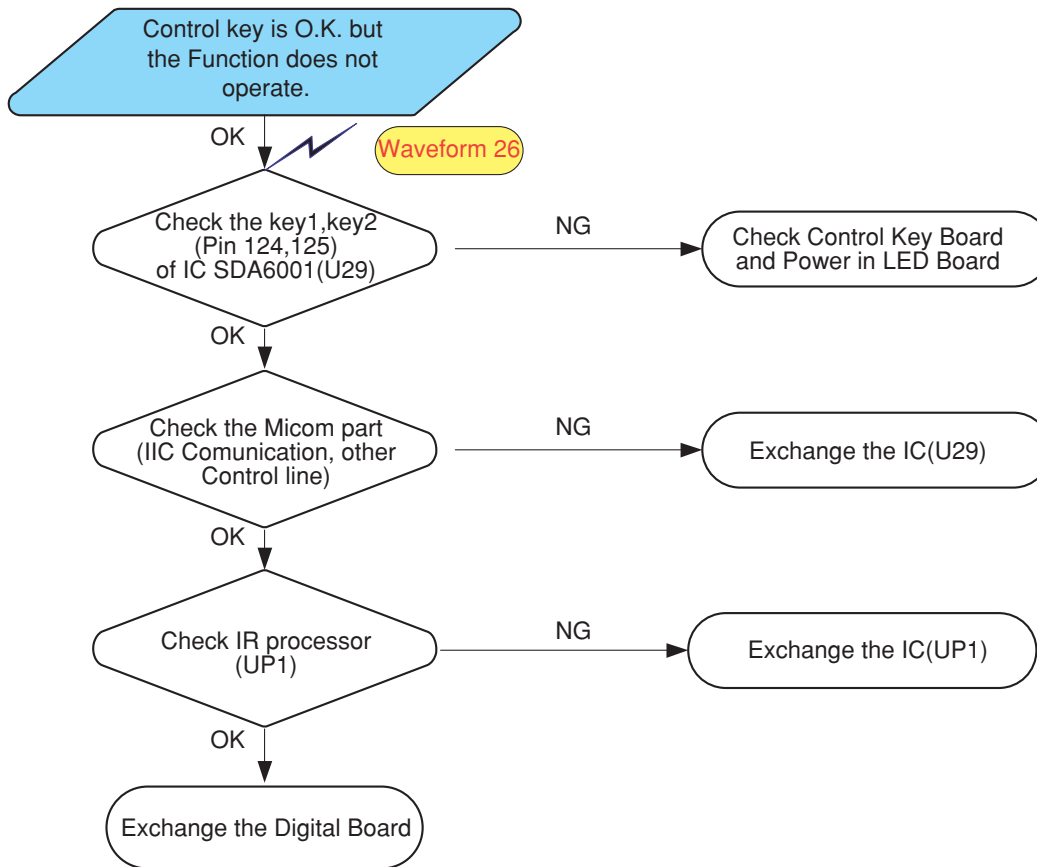
< Waveform 25 >

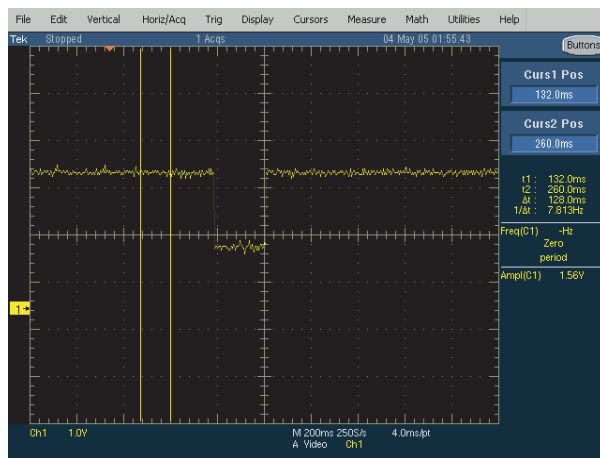
13. Key

Key switch is OK but the key does not function

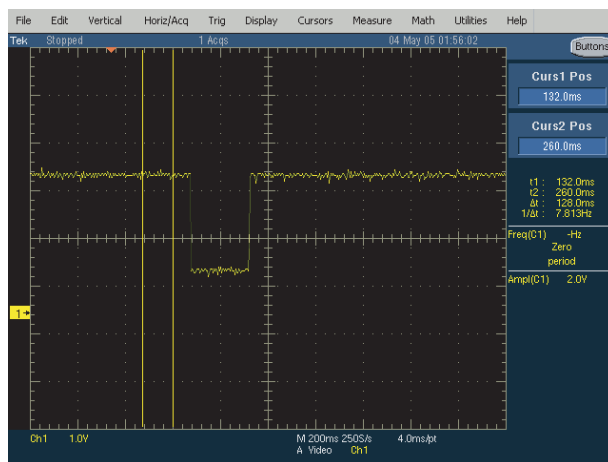
Preliminary Checkpoints

- ❖ Check the Solder state and pin of Connector JP10
- ❖ Check the Solder state in Key Board.
- ❖ Check the I2C between Micom and EEPROM.
- ❖ Check the Flash Memory or SDRAM.





< Waveform 26 >



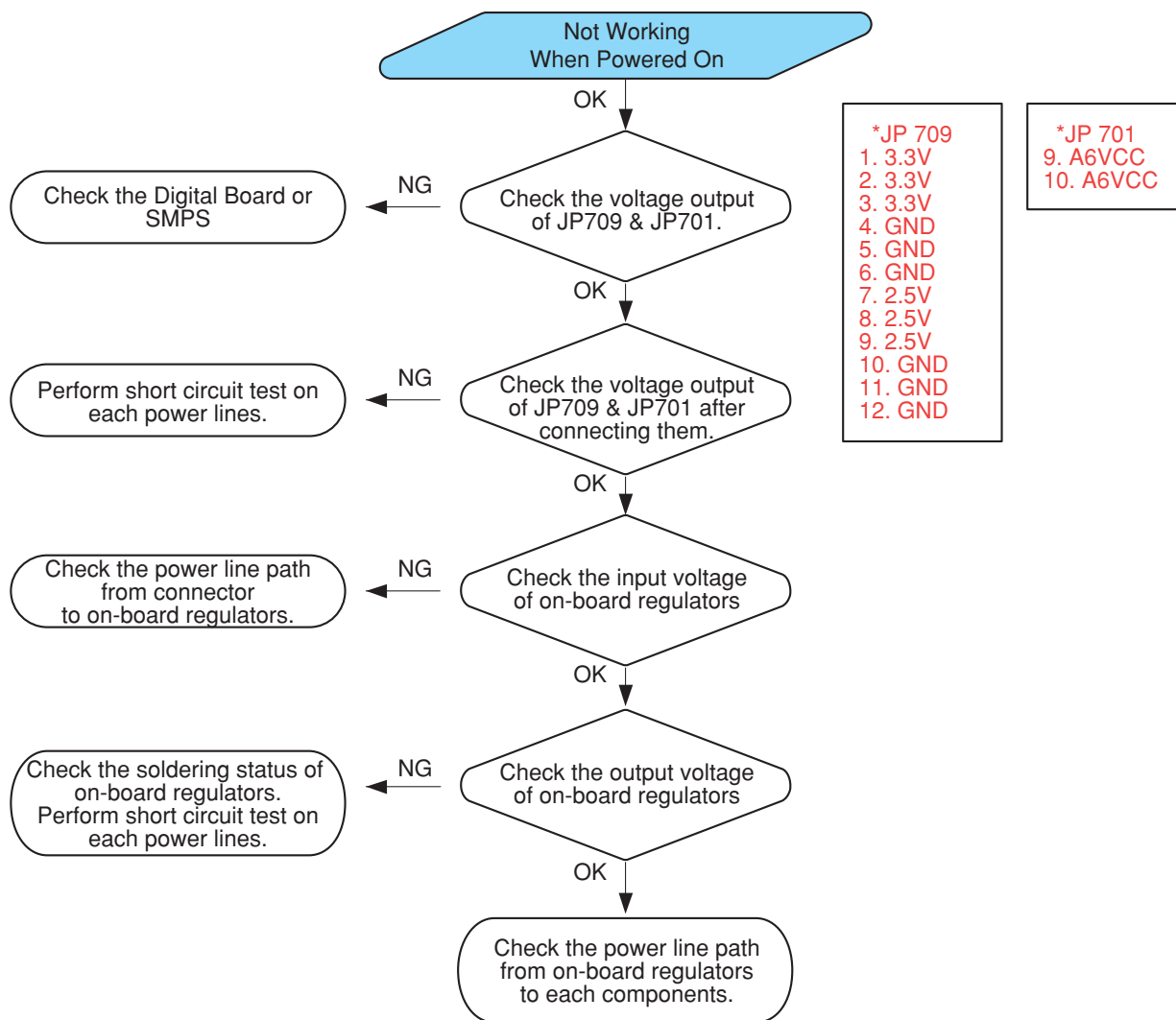
< Waveform 26-1 >

DTT Basic Inspection

Not Working When Powered On

Preliminary Checkpoints

- ❖ Check the condition of the input power & cable connection. (JP709)
- ❖ Check the condition of on-board regulators.
- ❖ Check for short circuits between each power terminal and the ground.



Note) Please refer to the power diagram of PAU-42THD for detail power connectivity information.

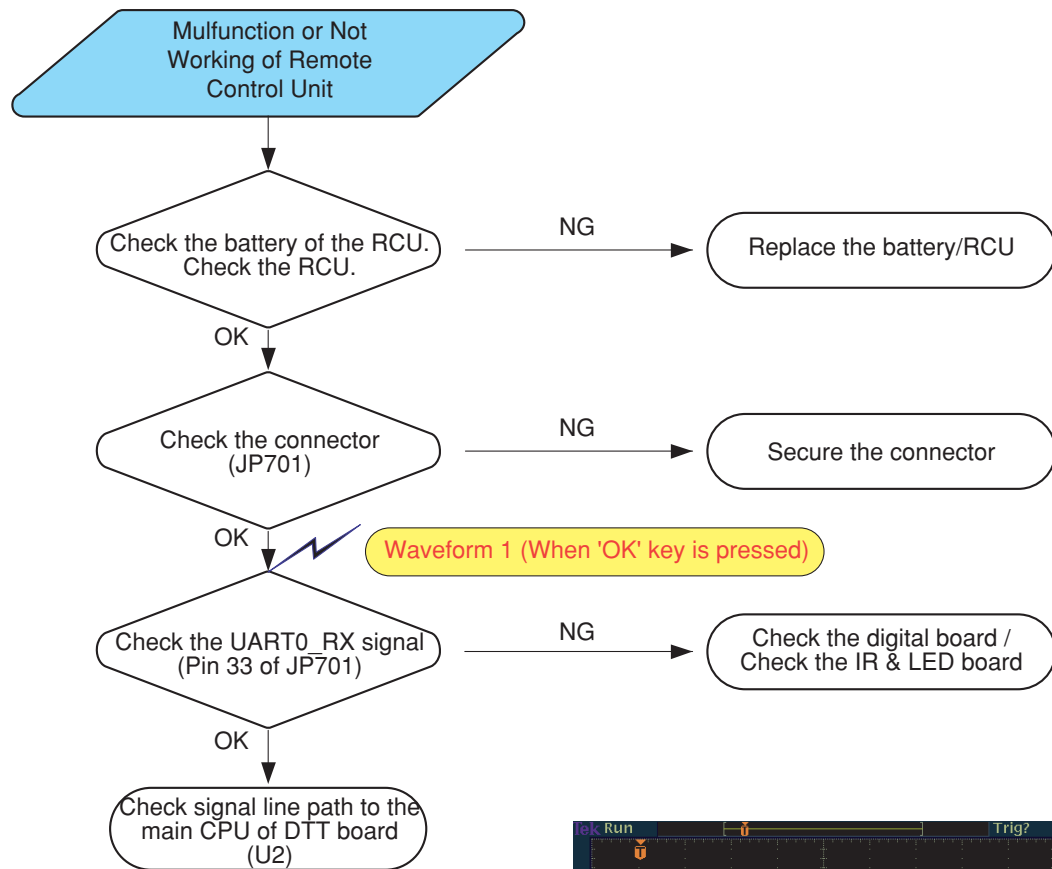
Note) Each input power of DTT comes via the digital board of SMPS directly. So, please check the digital board prior to SMPS when power input is not working properly.

Basic Inspection

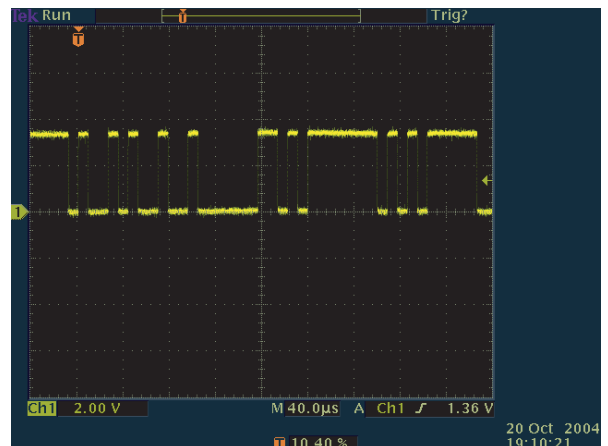
Multifunction or Not Working of Remote Control Unit

Preliminary Checkpoints

- ❖ Check the battery condition of the Remote Control Unit.
- ❖ Check against the a set that works normally to see if the RCU (Remote Control Unit) is working.
- ❖ Check whether the connector between Digital Board and DTT&Analog Board is connected. (JP701)
- ❖ Note that DTT board does not receive the key directly from RCU. Instead, MCU of digital board gets the keys and passes them to DTT through the UART0. (Pin 34 &35 of JP701)



Waveform 1 (When 'OK' key is pressed)



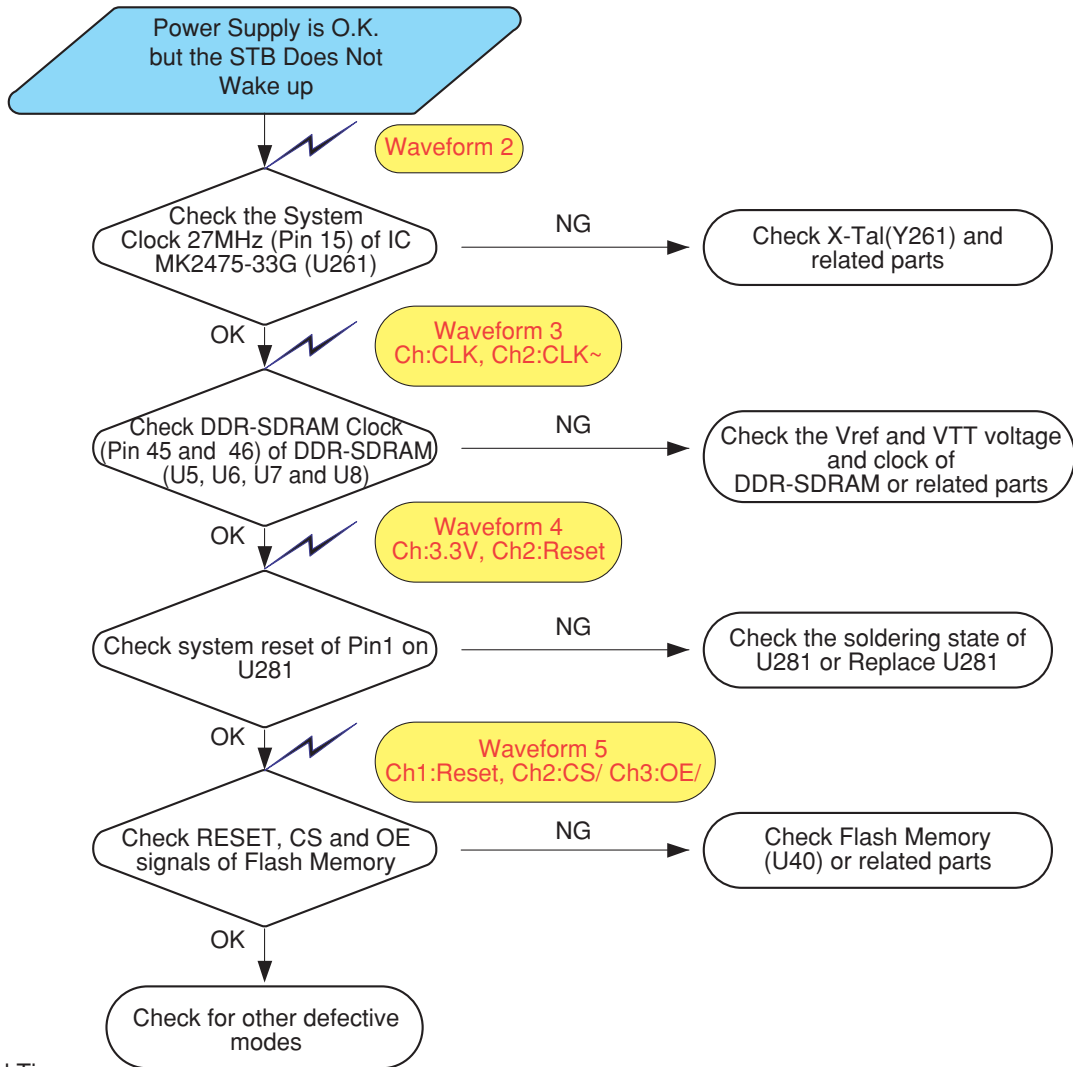
< Waveform 1 >

Basic Inspection

Power Supply is O.K. but the DTT Does Not Wake Up

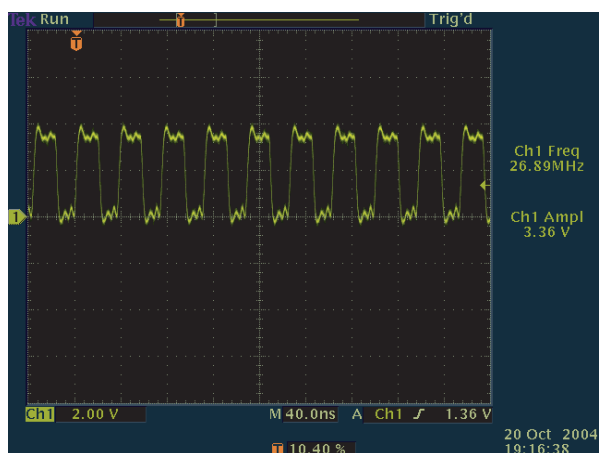
Preliminary Checkpoints

- ❖ Check the System Clock (27MHz) and the RESET terminal of CPU.
- ❖ Check the UART communication terminals between CPU and digital board (UART0).
- ❖ Check the I2C between CPU and LGDT3303 or EEPROM.
- ❖ Check the Flash Memory or DDR-SDRAM.

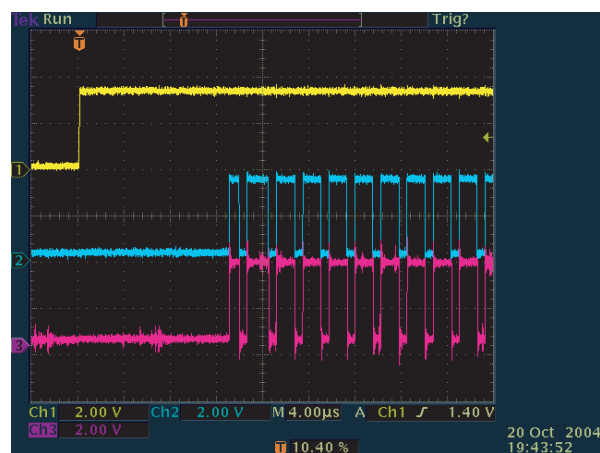


❖ Useful Tips

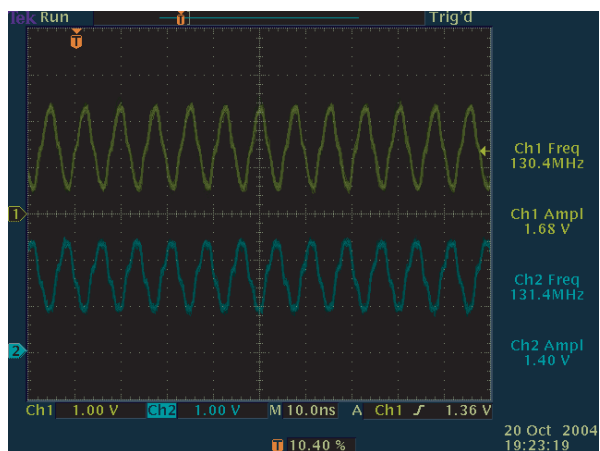
1. An Unstable 27 MHz clock may be due to defect of X-TAL or clock generator (U261). Replace the X-Tal or U261.
2. DDR-SDRAM have difference clock inputs which are positive and others are negative signal (Double Data Rate).
3. Vref and VTT are have $V_{cc}/2$ and check the power source whether defected.
4. When replacing parts, be careful of static charges from the tip of the solder iron that can easily damage the parts. Also, check for assembly condition, soldering condition, or for incorrect or reverse insertion of parts.
5. If the problems are caused by CPU, change CPU board and download Serial Number.



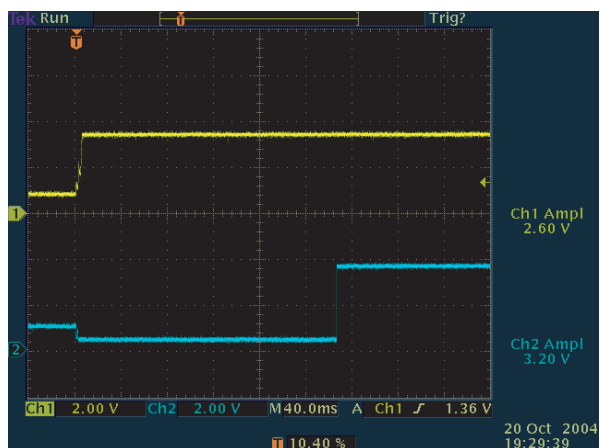
< Waveform 2 >



< Waveform 5 >



< Waveform 3 >



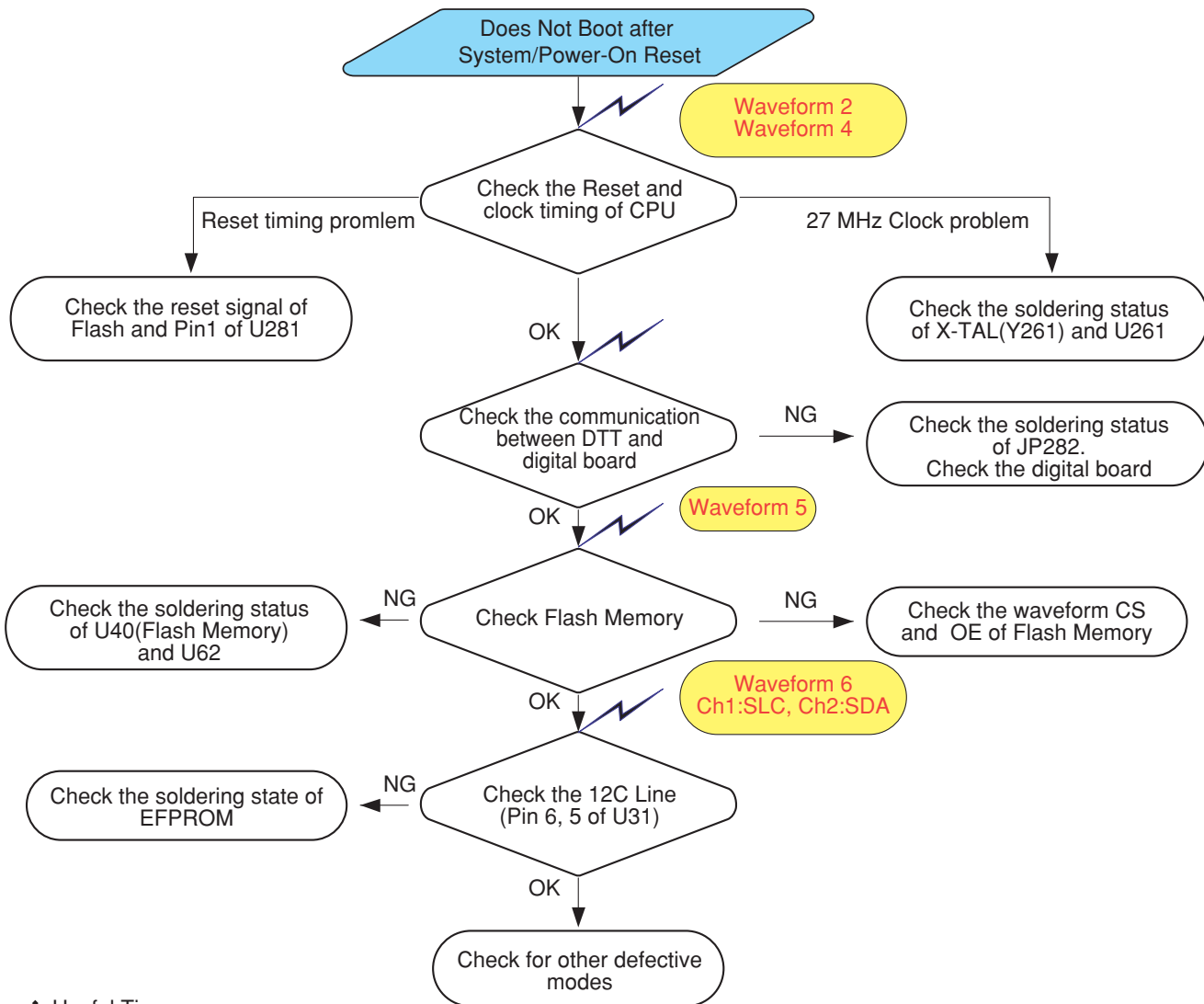
< Waveform 4 >

Basic Inspection

Does Not Boot after Power-On or System Reset

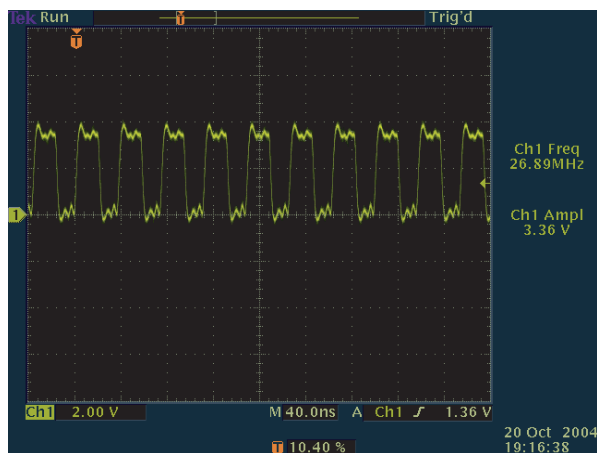
Preliminary Checkpoints

- ❖ The system clock 27MHz must be stable during the System Reset or the Power On Reset. However, if X-TAL is defective, the clock may not become stable until RESET is released.
- ❖ To check reset timing, turn the main power off and back on, and check if the following waveform is maintained.

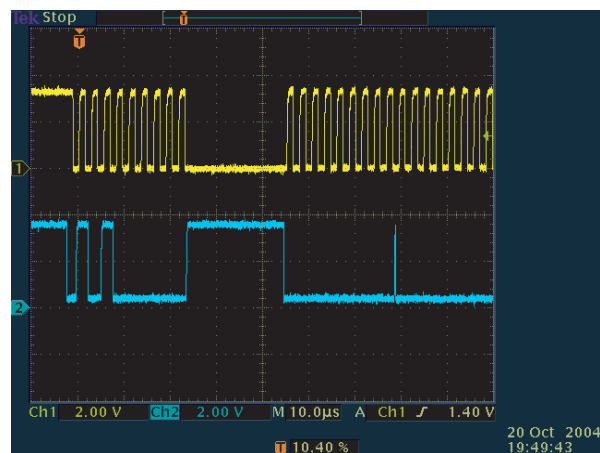


❖ Useful Tips

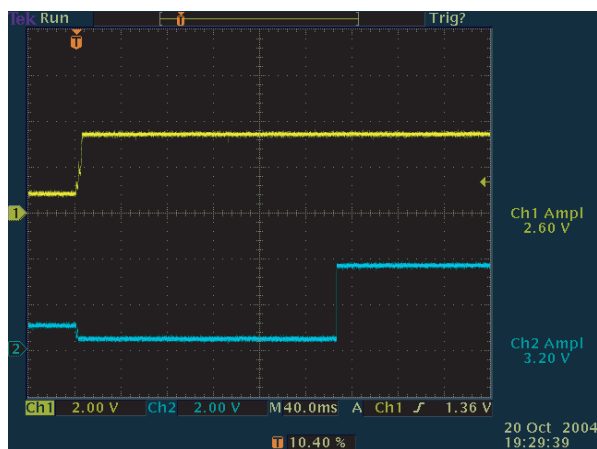
1. The CPU have two 12C for system controller.
One is communicate with system 12C(TDA10046) and the other is communicate with serial EFPROM for storing data.
2. When the system will not operate even though the basic inspection results were normal, check Flash Memory which contains channel data and program contents.
3. Additionally check for Local DATA and Local ADDRESS buses between CPU and Flash Memory.
4. When replacing parts, be careful of static changes from the tip of the solder iron that can easily damage the parts.
Also, check for assembly condition, soldering condition, or for incorrect or reverse insertion of parts.
5. If the problems are caused by CPU, change CPU board and download Serial Number.



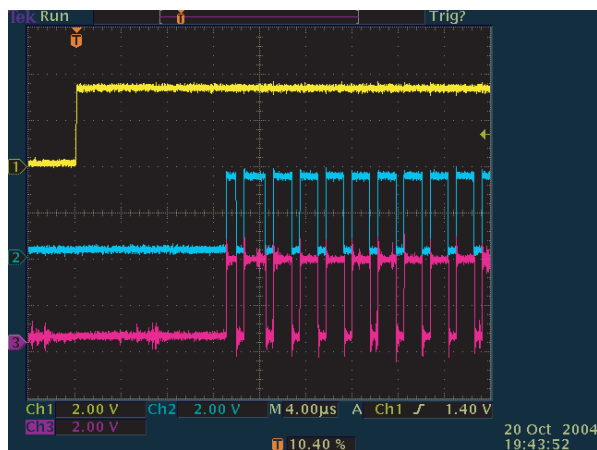
< Waveform 2 >



< Waveform 6 >



< Waveform 4 >



< Waveform 5 >

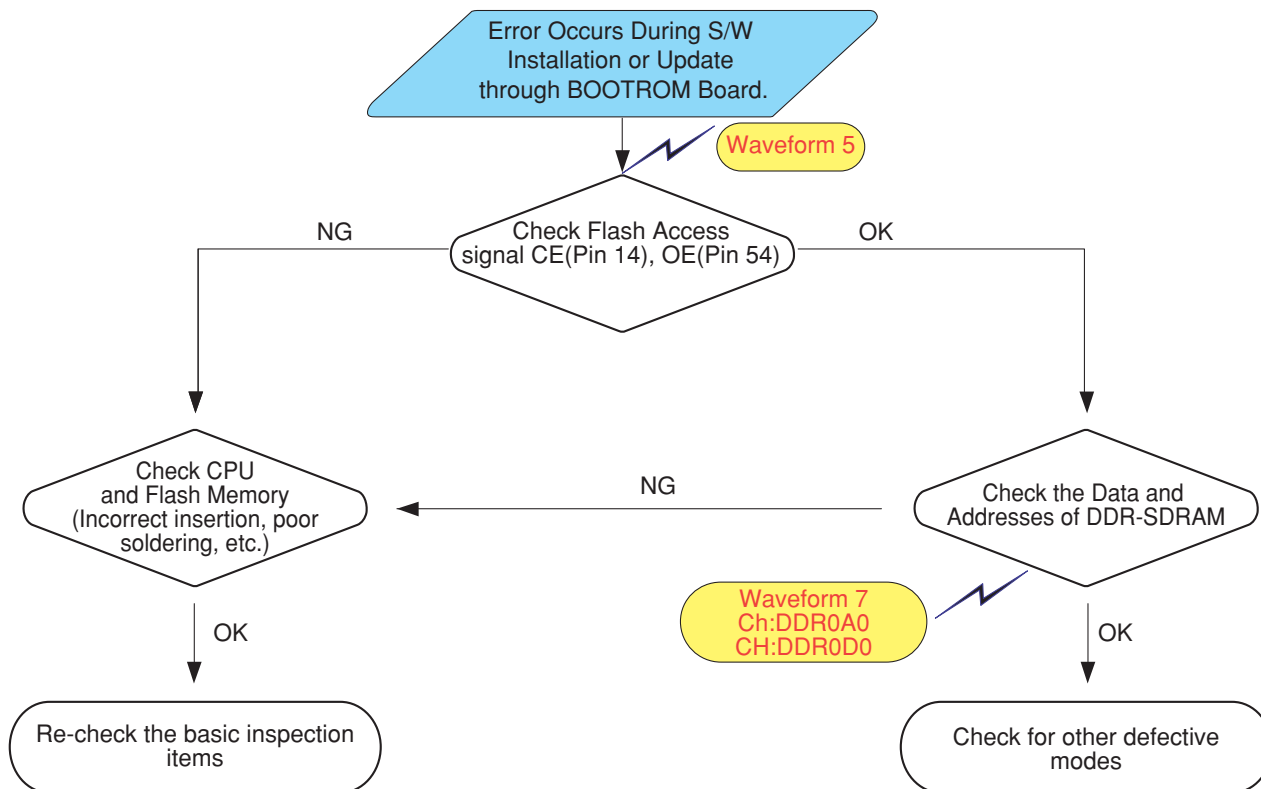
CPU / SYSTEM MEMORY INSPECTION

CPU /System Memory Inspection

Error Occurs During S/W Installation or Update through BOOTROM Board.
System Stops During Initial Booting or Operation.

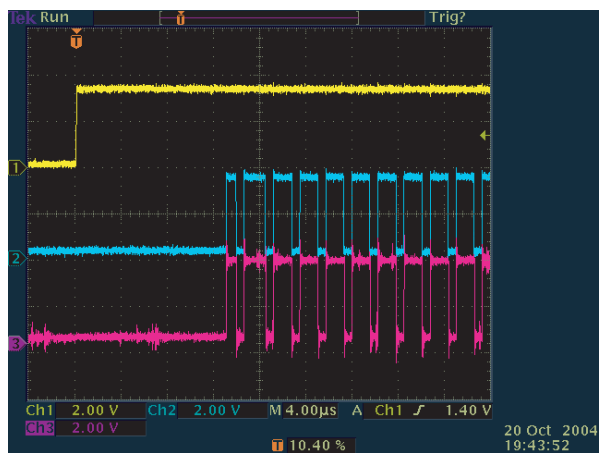
Preliminary Checkpoints

- ❖ If the system does not respond even though no problem was found after basic inspection, you need to check the flash memory that contains program codes for the proper system operation, Flash Memory Control signals that look similar to below waveforms will be repeated.
- ❖ The main cause of the problems related to System Memory (i.e. Flash and DDRSDRAM) is the soldering of parts. Therefore, first check the soldering condition and the power supply of IC.

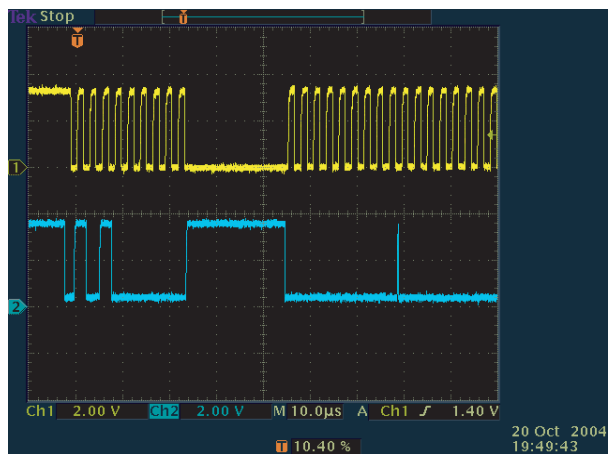


❖ Useful Tips

1. Check CE, OE and WE of Flash Memory when system does not operate or cannot update for new software.
2. When the system will not operate even though the basic inspection results were normal, check Flash Memory which contains channel data and program contents.
3. Additionally check for Local ADDRESS buses between CPU and Flash Memory.
4. Check the Memory interface of DDRSDRAM if the Flash Memory is not defected.
5. When replacing parts, be careful of static charges from the tip of the solder iron that can easily damage the parts. Also, check for assembly condition, soldering condition, or for incorrect or reverse insertion of parts.
6. If the problems are caused by CPU, change CPU board and download Serial Number.



< Waveform 5 >



< Waveform 7 >

MPEG INSPECTION

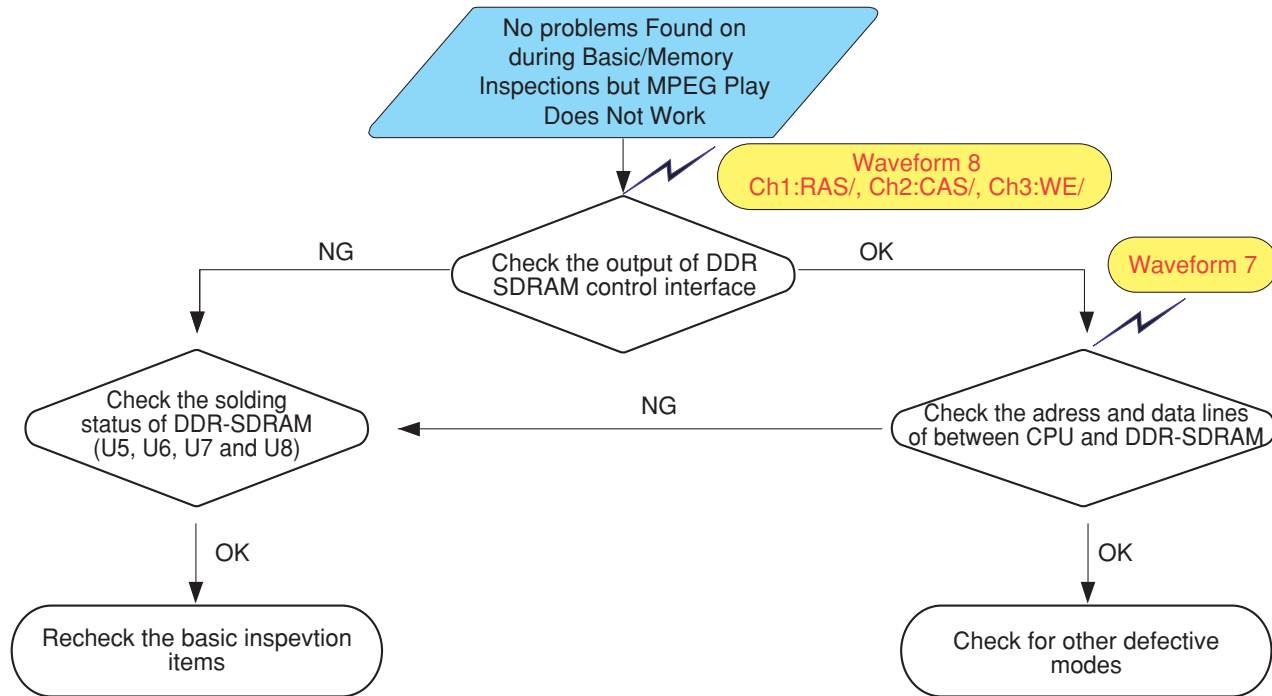
MPEG Inspection

No problems Found during Basic and CPU/System Memory Inspections, but MPEG Does Not Play.

- Check DDR SDRAM Interface/Transport Stream(TS).

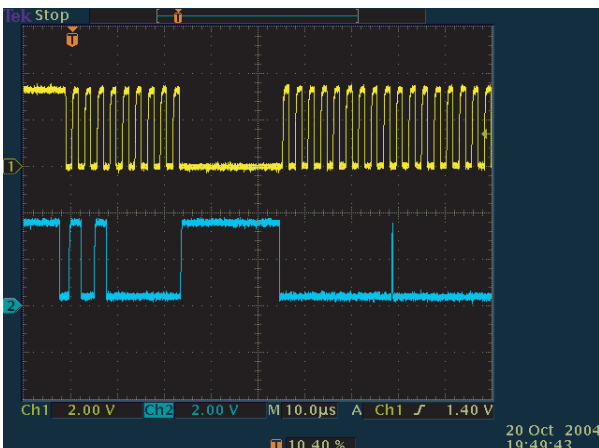
Preliminary Checkpoints

- ❖ If the system does not respond even though no problems were found during the basic inspection and the CPU/Flash inspection, you will need to check the DDR-SDRAM interface.
- ❖ Check control lines between DDR-SDRAM and CPU also data/address lines.
- ❖ The main cause of the problems related to System Memory (i.e. Flash and DDR-SDRAM) is the soldering of parts. Therefore, in the event of a problem, first check the condition of the soldering and the power supply of IC.

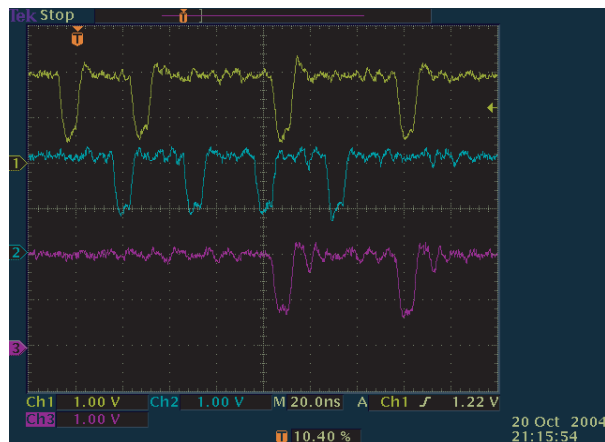


❖ Useful Tips

1. Make sure that basic function of the system is normal by checking that the VFD toggles each time you press the Front power key.
2. Check the interface between CPU and DDR-SDRAM U5, U6, U7 and U8.
The interface is composed of clock(133MHz), address, data and control signals.
3. If all connections are complete, replace the DDR-SDRAM.
4. If the problems are caused by CPU, change CPU board and download Serial Number.



< Waveform 7 >



< Waveform 8 >

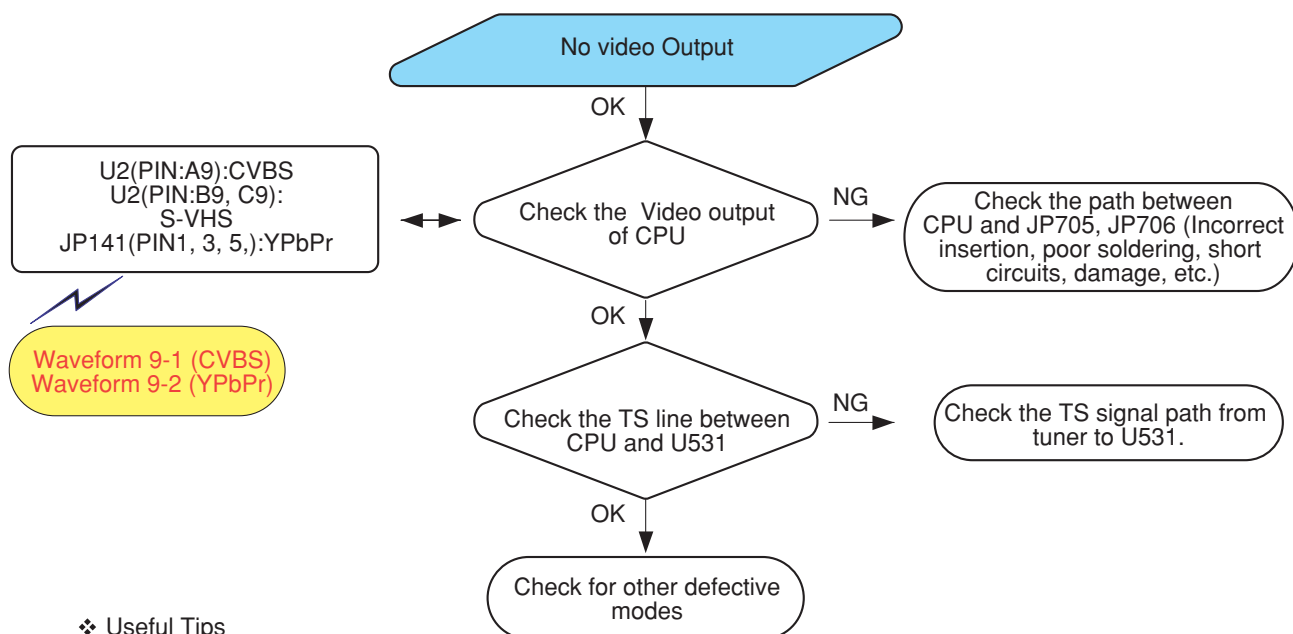
A/V INSPECTION

A/V Inspection

No Video Output - CVBS/YPbPr

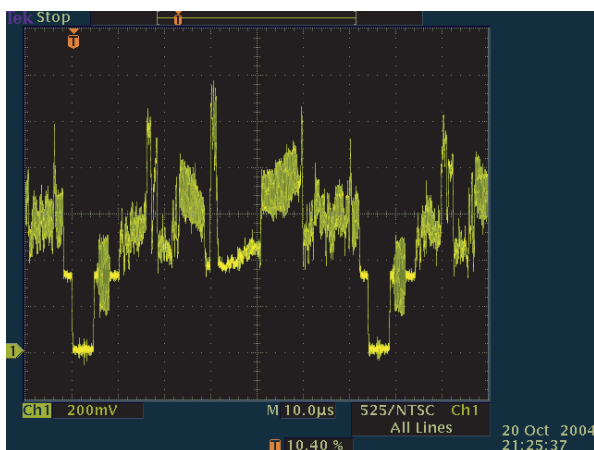
Preliminary Checkpoints

- ❖ If no video is output while the UI(User Interface)and key controls are normal, first check the video output signal of CPU.
- ❖ If no video signal found,check the TS parallel data between CPU and U531. If no output of TS data,check the U531 and relevant components.

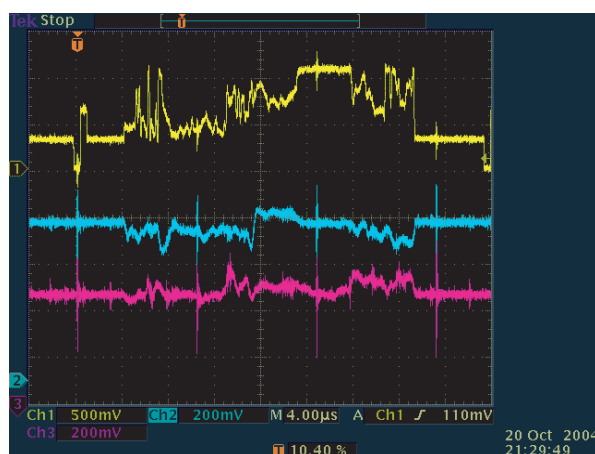


❖ Useful Tips

1. If no output of TS data but tuner is good, check the U531 and relevant components.



< Waveform 9-1 >



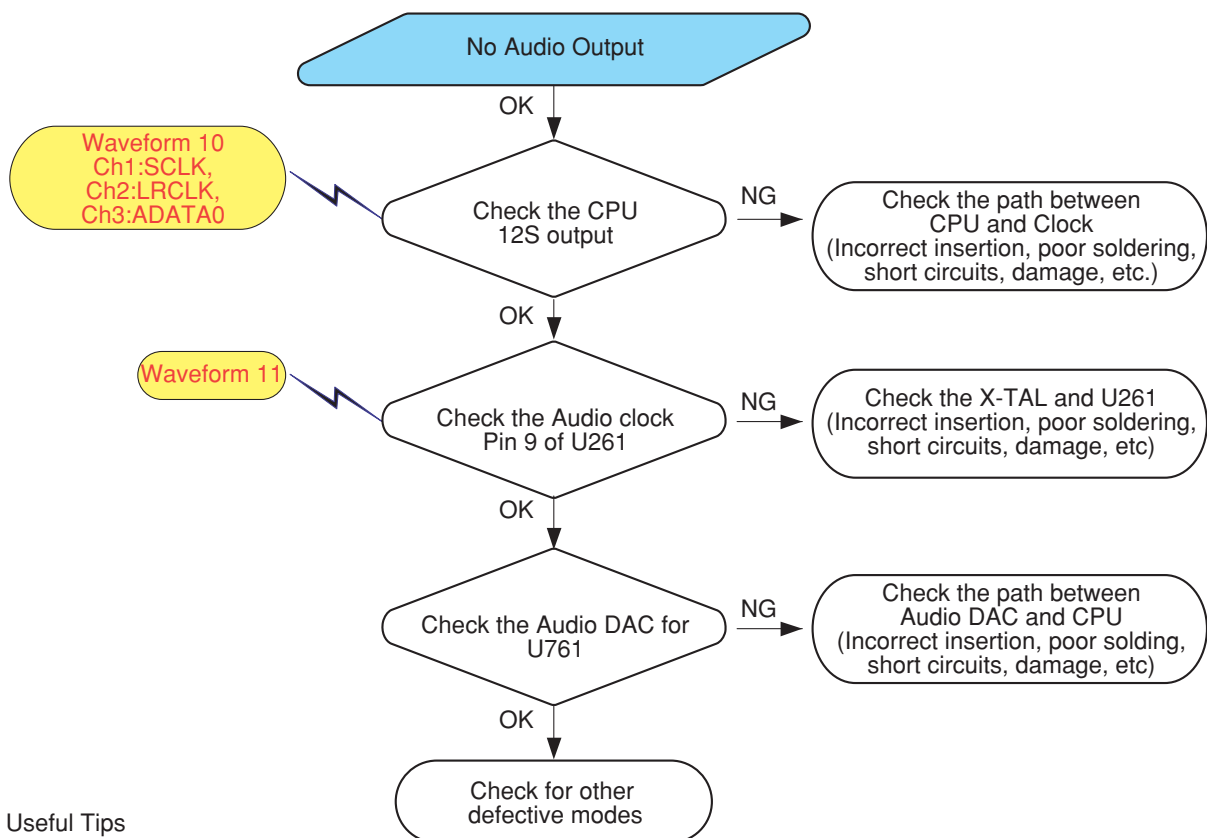
< Waveform 9-2 >

A/V Inspection

No Audio Output

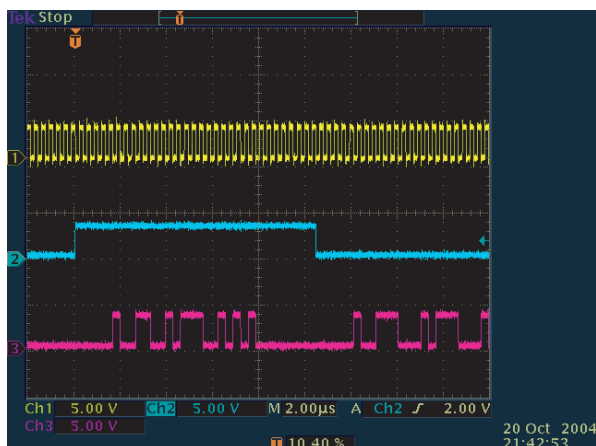
Preliminary Checkpoints

- ❖ If no audio is output through JP800 while the system is normal, first check the CPU AUDIO output and clock. [I2S interface].
- ❖ If no problems were found, check the U671 for Audio DAC.

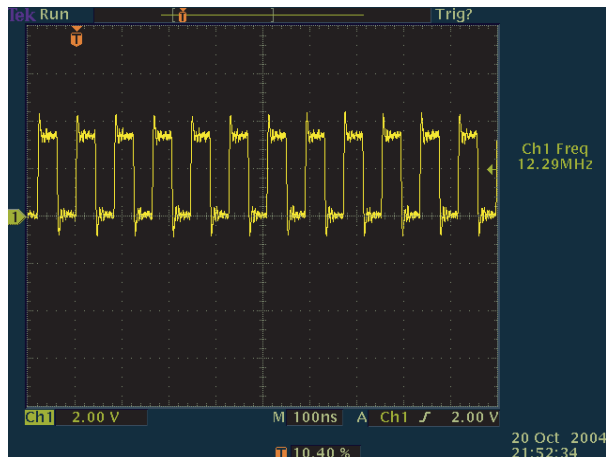


❖ Useful Tips

1. The Audio problem largely from the defect of CPU, Audio DAC or incomplete soldering of the parts located along the audio output path.
2. Audio DAC pins represent serial data, LR clock, Bit clock and system clock, respectively.



< Waveform 10 >



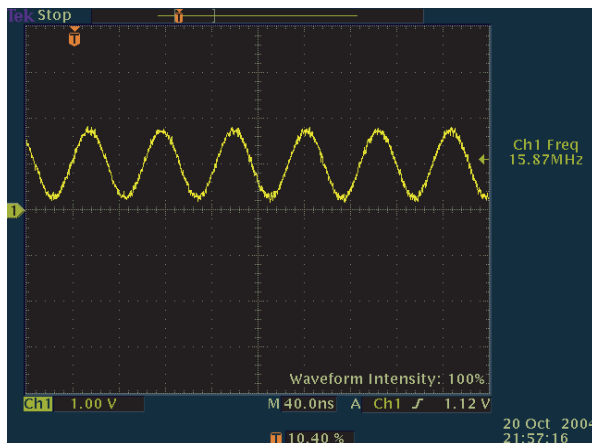
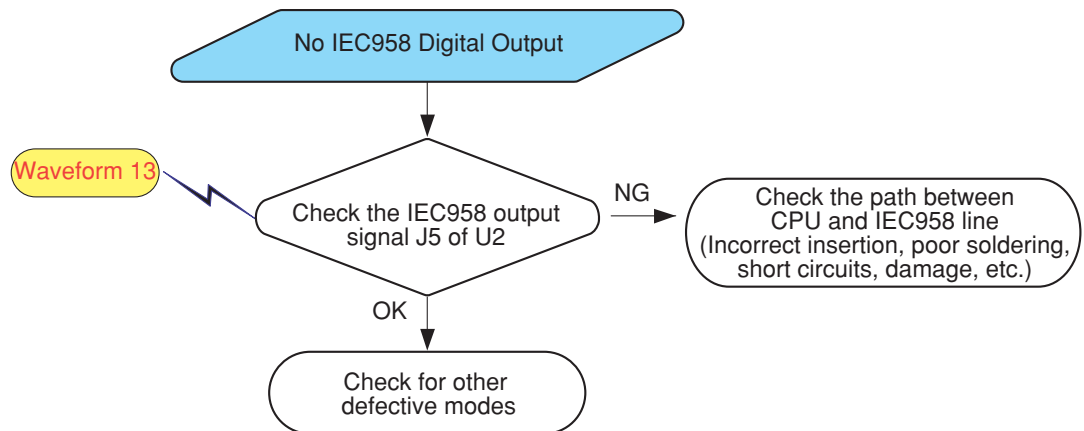
< Waveform 11 >

A/V Inspection

No digital audio output

Preliminary Checkpoints

- ❖ If the SPDIF output is not working while the system is normal (Including MPEG play and A/V output), check for any problems with the SPDIF output of CPU.



< Waveform 13 >

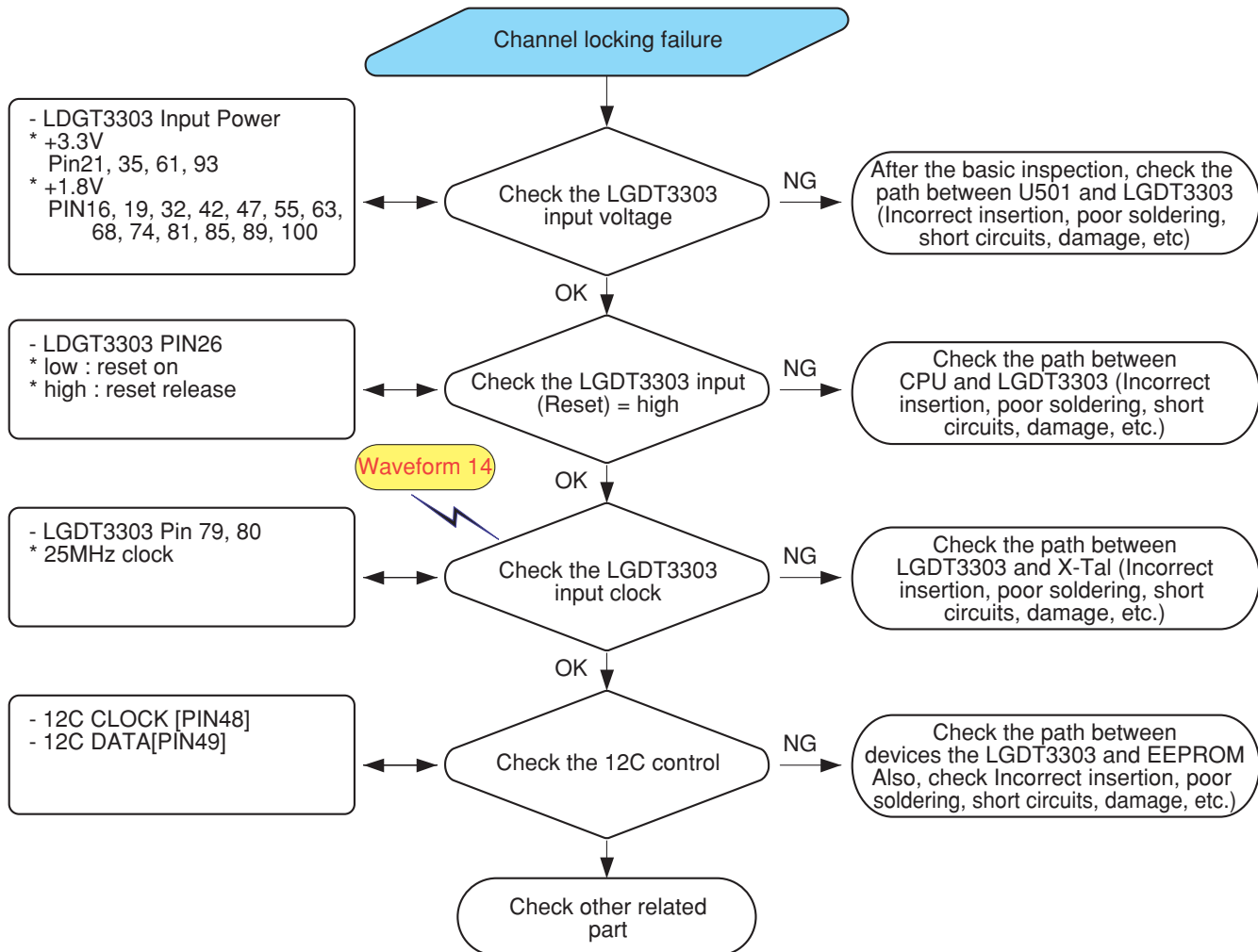
CHANNEL INSPECTION

Channel Inspection

No Channel Locking with No Problems with Power/CPU

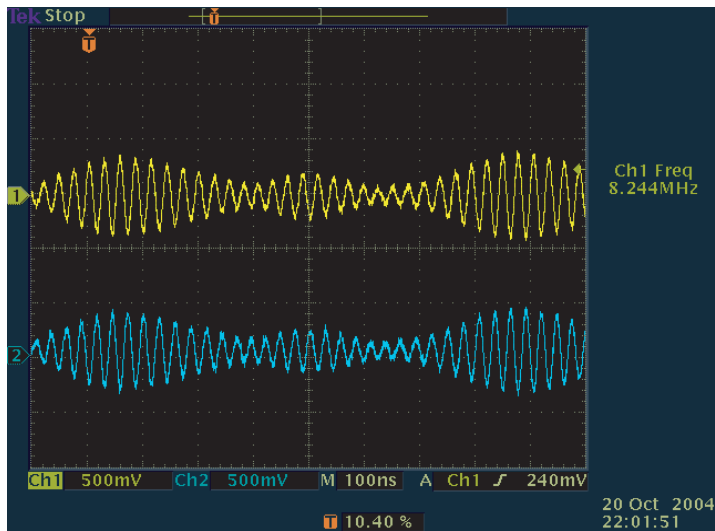
Preliminary Checkpoints

❖ If channel locking fails even though there is no problems with the system, check the Interface between Tuner, LGDT3303 and CPU.



❖ Useful Tips

1. Check the power by U532 are properly provided to the U531.
2. Check the 12C interface between tuner and 10046. If no problem, inspect along the tuner output path to TDA10046. Whether the components of R, L, C's soldering status.
3. If no problem, replace the Tuner.
4. If the problems are founded by CPU, replace the CPU board and also download SN.



< Waveform 14 >

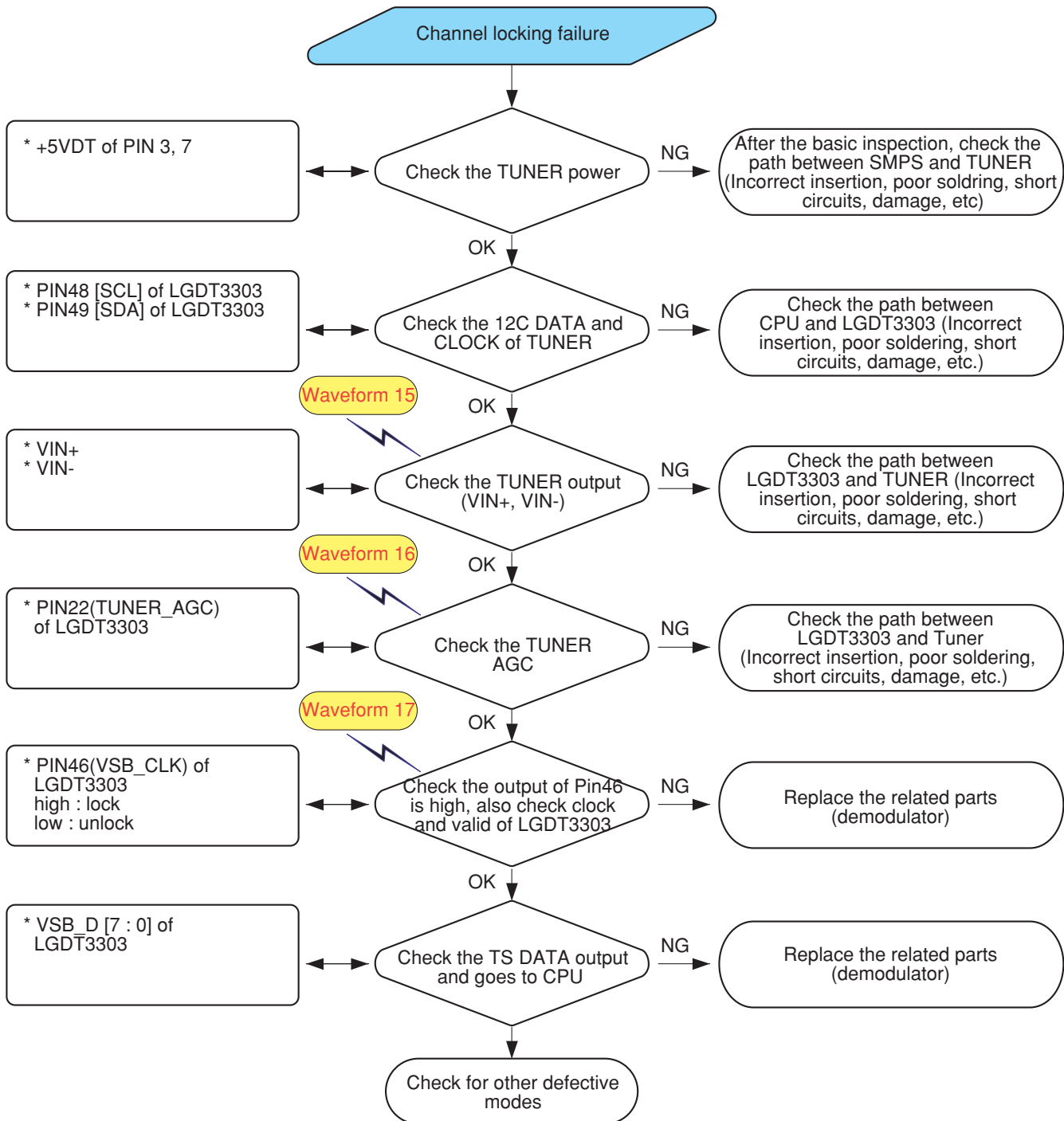
CHANNEL INSPECTION 2

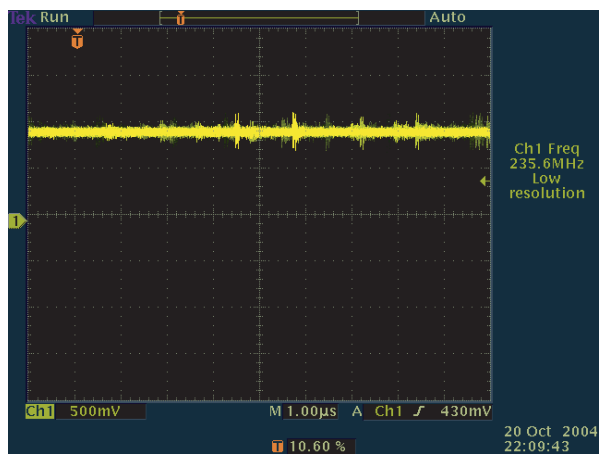
Channel Inspection

No Channel Locking with No Problems with Power/CPU

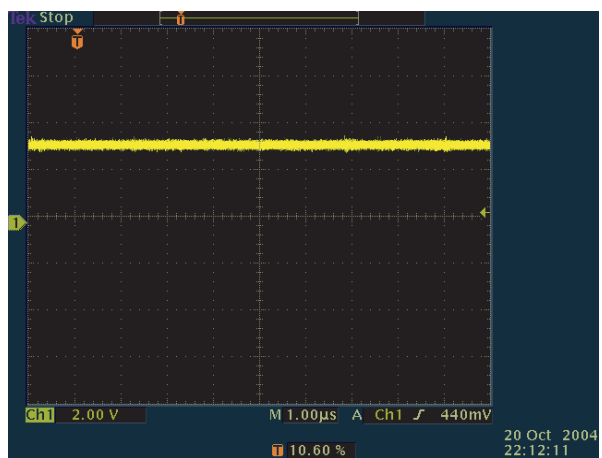
Preliminary Checkpoints

- ❖ If channel Locking fails even though there is no problems with the system, check the TUNER 12C BUS and IF signals.
- ❖ If the Tuner 12C and IF signals are good but cannot search, check TS data goes to CPU





< Waveform 15 >

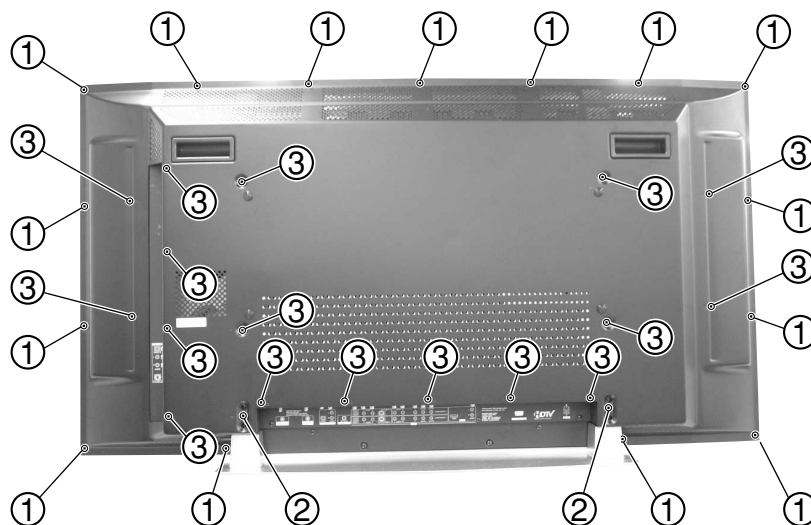


< Waveform 16 >

DISASSEMBLY

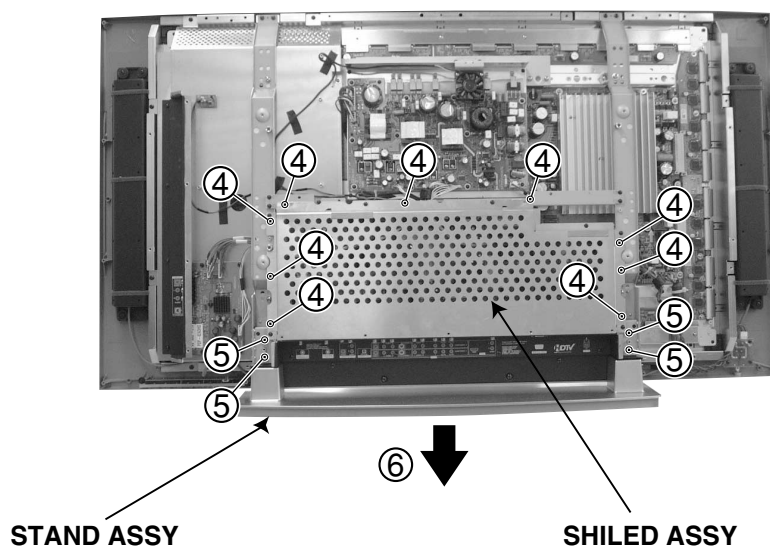
1 Rear Case(42a3HD), Stand and Shield Assys

- ① Remove the 15 screws (T4 x 16).
- ② Remove the two screws (M4 x 12).
- ③ Remove the 17 screws (M4 x 8).



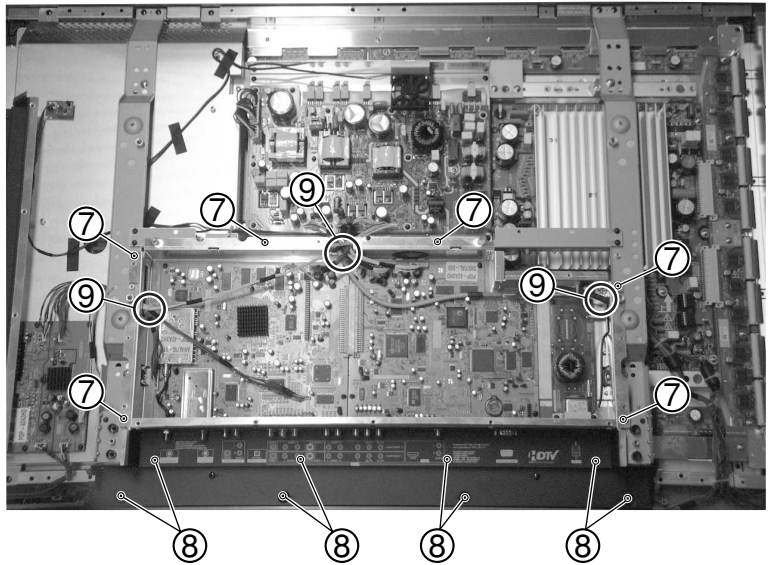
SHIELD ASSY and STAND ASSY

- ④ Remove the nine screws (M3 x 8).
- ⑤ Remove the four screws (M4 x 12).
- ⑥ Remove the stand.



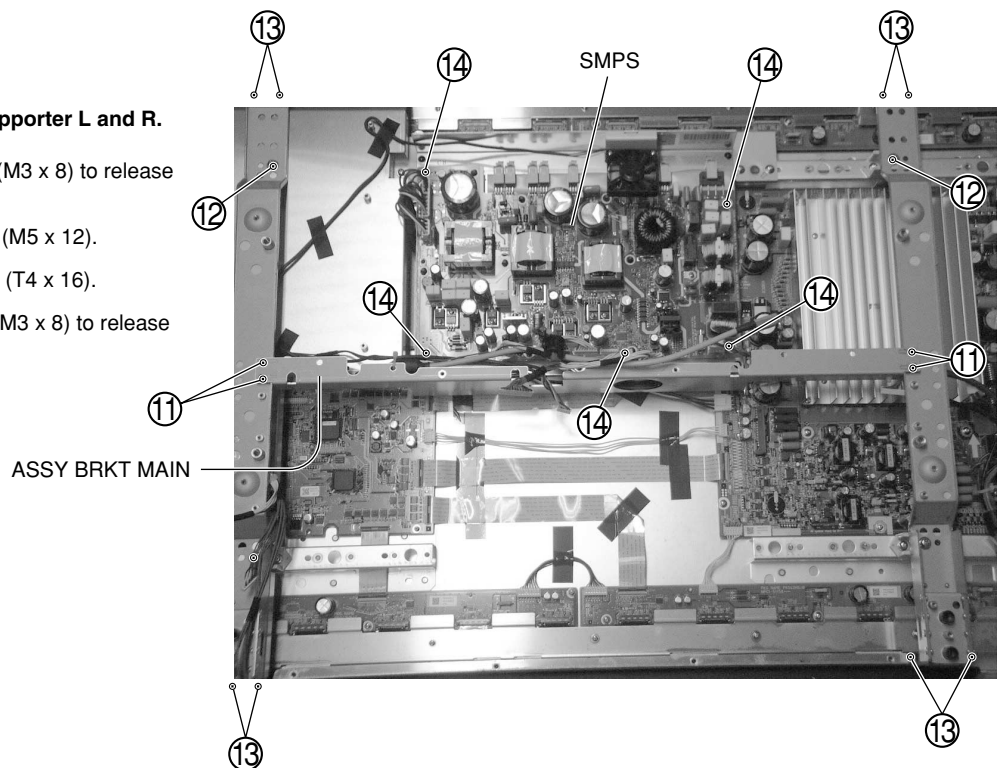
2 ANALOG, DIGITAL and EMI FILTER

- ⑦ Remove the six screws (M3 x 8).
- ⑧ Remove the eight screws (M4 x 8).
- ⑨ Remove the connector (right → center → left).
- ⑩ Remove the ANALOG DIGITAL EMI FILTER.



Remove the Assy Brkt V-supporter L and R.

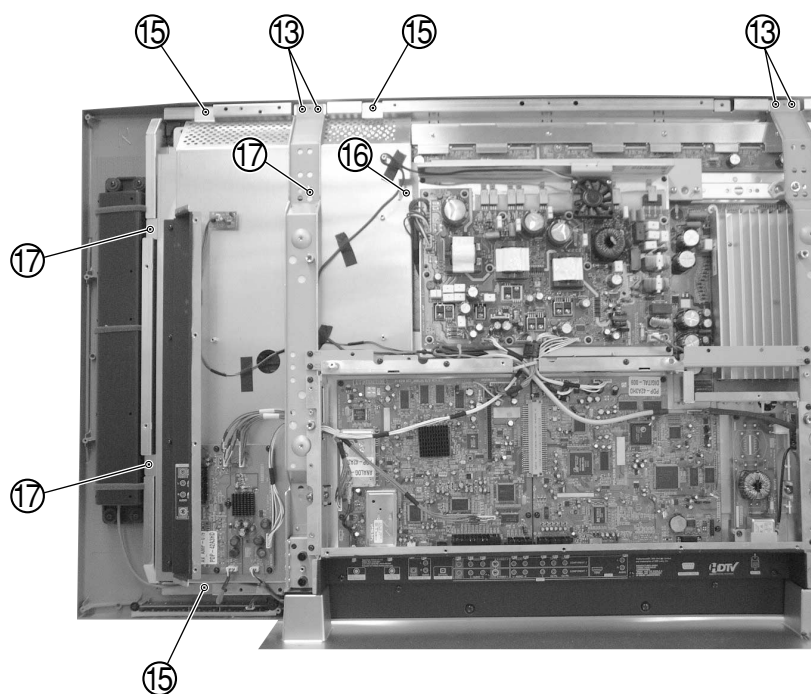
- ⑪ Remove the four screws (M3 x 8) to release the ASSY BRKT MAIN.
- ⑫ Remove the four screws (M5 x 12).
- ⑬ Remove the eight screws (T4 x 16).
- ⑭ Remove the five screws (M3 x 8) to release the SMPS.



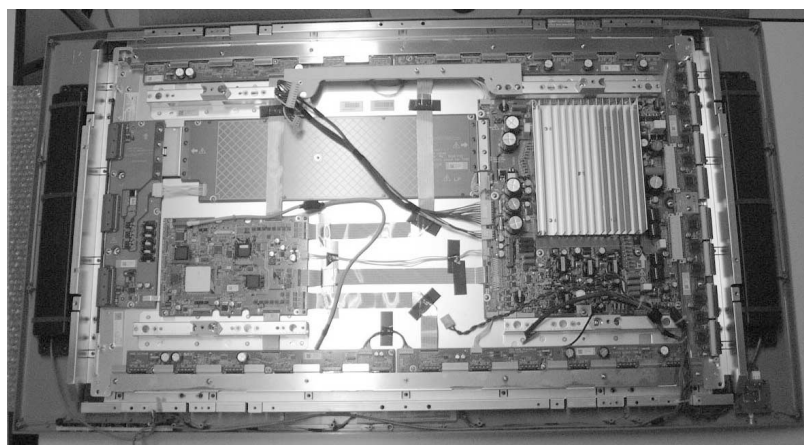
3 SHIELD SIDE

Remove the SHIELD SIDE

- ⑮ Remove the three screws (T4 x 16).
- ⑯ Remove the screw (M4 x 10).
- ⑰ Remove the three screws (M4 x 8).



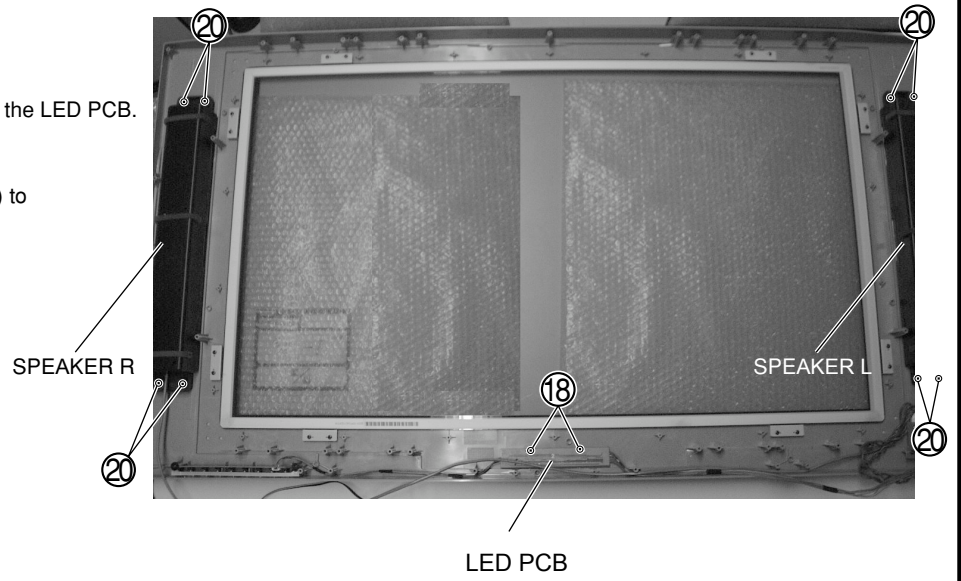
PDP PANEL



4 SPEAKERS

18 Remove the two screws to release the LED PCB.

20 Remove the eight screws (T4 x 14) to release the SPEAKER L/R.



HOW TO DIAGNOSE THE PDP MODULE

HOW TO DIAGNOSE THE PDP MODULE (PDP-NP42H5MF01PA/PB)

1. List of tools required for repair
2. Points of failure diagnosis for a Board Assy (PKG)
3. Replacement method of a Board Assy (PKG)
and notes on replacement
4. Adjustments after replacement of parts in the module
5. Operation check

1. List of tools required for repair

- a) Phillips screwdriver: For detaching/reattaching PKGs
- b) Antistatic wrist strap:
To be used when electronic components, such as PKGs, are to be handled
- c) Signal generator (PC, etc.): For voltage adjustment and display check
- d) DVM: For voltage adjustment.
- f) D V M Tester: For cable check, voltage adjustment, etc.
- g) Cushion: To be used when the PKGs are to be replaced

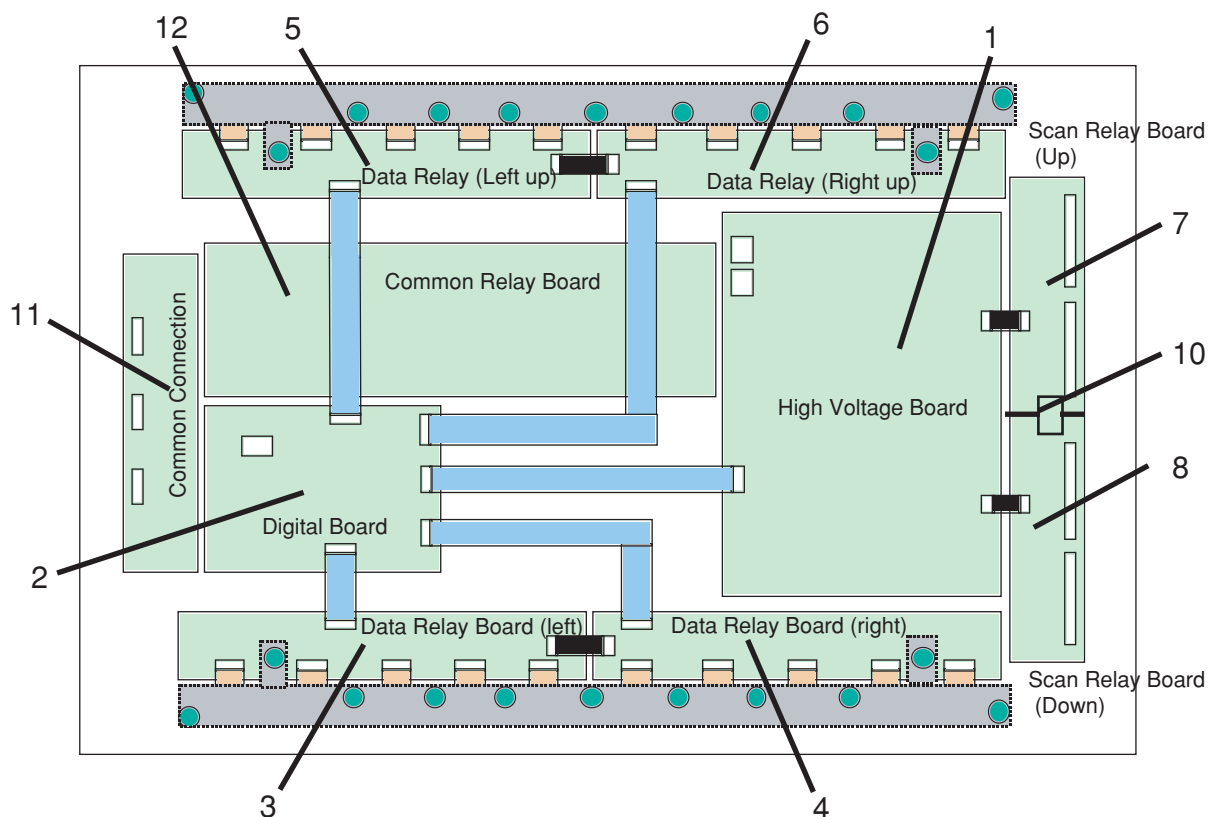
Note: Be sure to wear a wrist strap when you detach/reattach PKGs (Board Assy) to protect electronic components from being damaged by electrostatic charges.

PARTS LIST

NP42H5MF01PA/PB

| SYMBOL | PART NAME | | PART NO | QTY | NOTE |
|--------|------------------|---------|----------|-----|------------------------------|
| | TYPE NAME | VERSION | | | |
| 1 | PKG42H5G1 | 03B | 9S899891 | 1 | High Voltage Board |
| 2 | PKG42H5C1 | 17C-08 | 9S890002 | 1 | Digital Board |
| 3 | PKG42H5J7 | 02A | 9S899895 | 1 | Data Relay Board(Left Down) |
| 4 | PKG42H5J8 | 02A | 9S899896 | 1 | Data Relay Board(Right Down) |
| 5 | PKG42H5J5 | 02A | 9S899893 | 1 | Data Relay Board(Left Up) |
| 6 | PKG42H5J6 | 02A | 9S899894 | 1 | Data Relay Board(Right Up) |
| 7 | PKG42H5E1 | 02A | 9S899897 | 1 | Scan Relay Board(Up) |
| | PKG42H5E1 | 02C | 9S899862 | 1 | |
| 8 | PKG42H5E2 | 02A | 9S899898 | 1 | Scan Relay Board(Down) |
| | PKG42H5E2 | 02C | 9S899863 | 1 | |
| 10 | PKG42H5E3/50X6E3 | 02A | 9S899899 | 1 | Scan Relay Board(Center) |
| 11 | PKG42H5J4 | 02A | 9S899919 | 1 | Common Connection Board |
| 12 | PKG42H5J3 | 02A | 9S899918 | 1 | Common Relay Board |

- Notes:
- The version of a board assy (PKG) is indicated on the label on the board assy.
 - When replacing the scanning relay board assys (PKG-C), make sure that the PKG-U and PKG-D of the same version are used, to ensure correct scanning timing.



Version label of the board assy (PKG)

- Part name
- Serial number
- HW version • SW version

Digital PKG

- Part name
- Serial number
- Version number

Other PKG

Compatible table of the board version

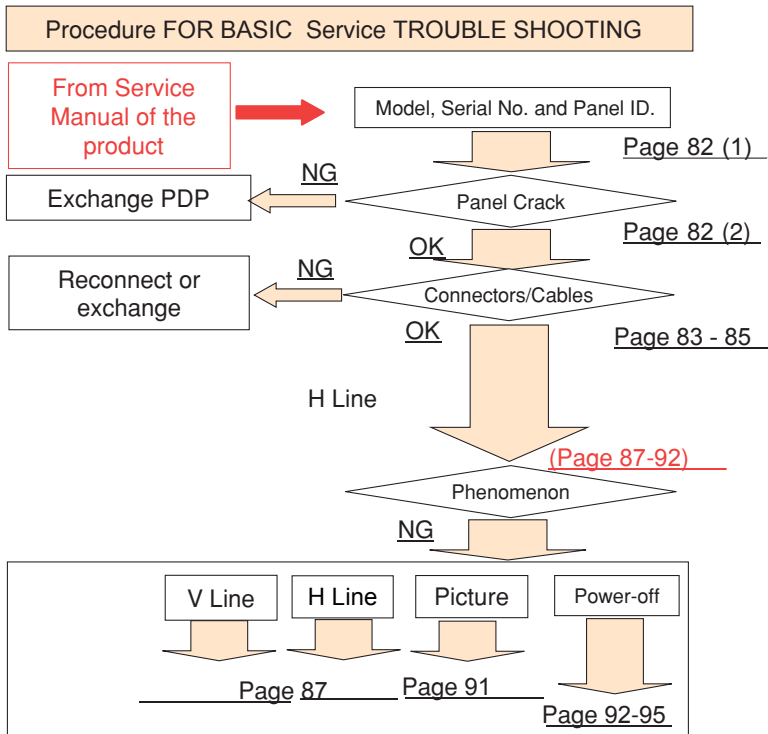
NP42H5MF01PA/PB

Upper compatible if no terms.

| Name of (board) | Version | Replaceable Version | Conditions | Note |
|---|--------------------------------|---------------------|------------|---|
| High Voltage Board PKG42H5G1 | 03B | 03B | | |
| | | | | |
| Common Connection Board PKG42H5J4 | 01A | 01A/02A | | |
| | 02A | | | |
| Data Relay Board(Left Down) PKG42H5J7 | 01A | 01A/02A | | |
| | 02A | | | |
| Data Relay Board(Right Down) PKG42H5J8 | 01A | 01A/02A | | |
| | 02A | | | |
| Data Relay Board(Left Up) PKG42H5J5 | 01A | 01A/02A | | |
| | 02A | | | |
| Data Relay Board(Right Up) PKG42H5J6 | 01A | 01A/02A | | |
| | 02A | | | |
| Common Relay Board PKG42H5J3 | 01A | 01A/02A | | |
| | 02A | | | |
| Scan Relay Board(Center) PKG42H5E3/50X6E3 | 01A | 01A/02A | | |
| | 02A | | | |
| Scan Relay Board(Up) PKG42H5E1 | 01A | 01A/02A | | Scan Relay Board(up) should be combined with the same version of Scan Relay Board(Down) . |
| | 02A | | | |
| | 01A | 01C/02C | | |
| | 02C | | | |
| Scan Relay Board(Down) PKG42H5E2 | 01A | 01A/02A | | Scan Relay Board(Down) should be combined with the same version of Scan Relay Board(Up). |
| | 02A | | | |
| | 01C | 01C/02C | | |
| | 02C | | | |
| Digital Board PKG42H5C1 | 01C-07/02C-07 11C-07/12C-07 | 17C-08 | | |
| | 13C-07 | | | |
| | 14C-07 | | | |
| | 12C-08 | | | |
| | 14C-08 | | | |
| | 15C-08 | | | |
| | 16C-08 | | | |
| | 17C-08 | | | |

TROUBLE SHOOTING

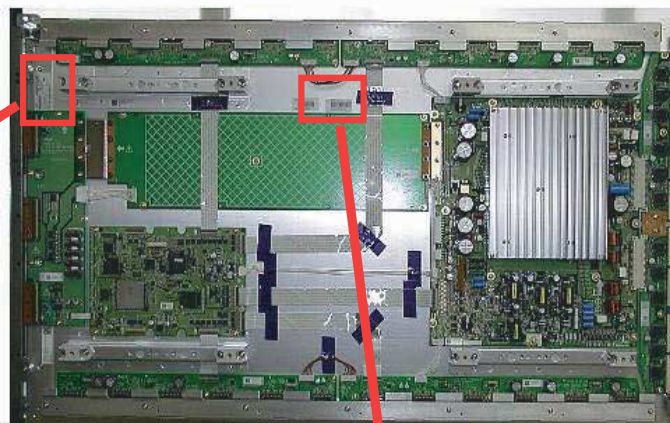
Follow the procedure below for failure diagnosis. Keep wearing Antistatic wrist Band until all work and testing has finished.



(1) Model, Serial No., and Panel ID

Refer to the photographs below to find Model, Serial No. and Panel ID.

Model/Serial No.



Panel ID



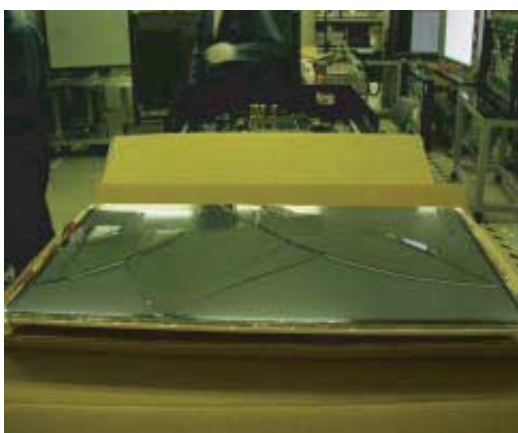
NEC
408200943
MODEL NP42H5MF01
MADE IN JAPAN
CODE AA-C3
NEC Plasma Display Corporation

Above Example
Model: NP42H5MF01AA
Serial No.: 408200943

222407145612

(2) Panel Crack

Refer to the photographs below to check panel for crack.

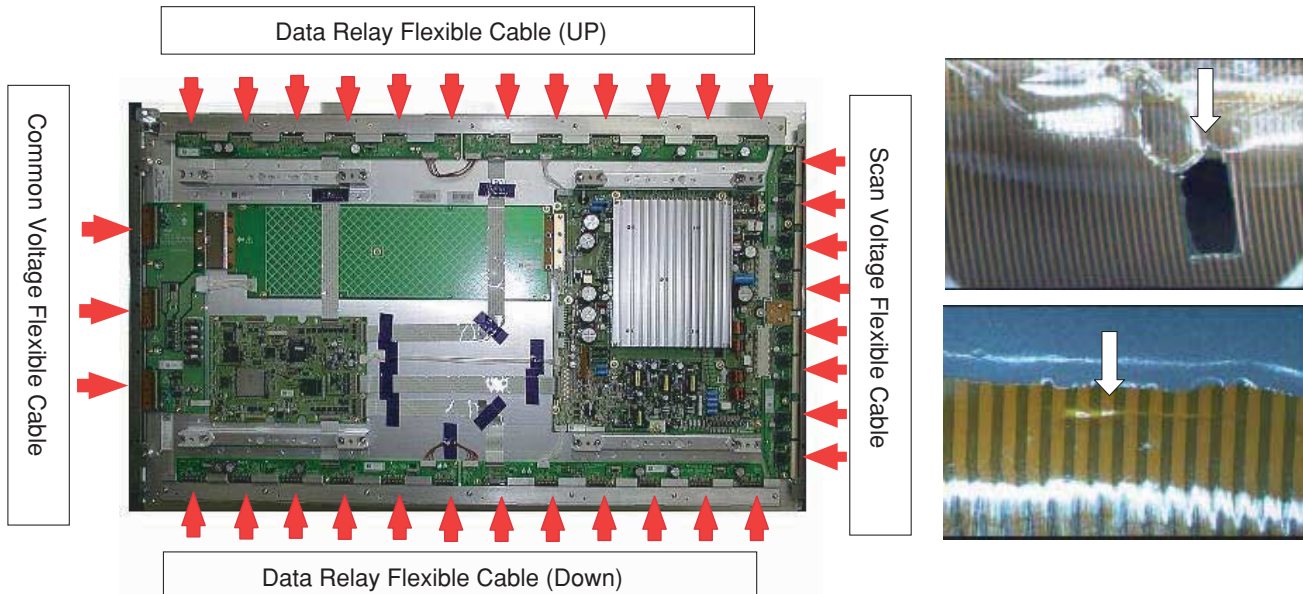


Panel may be cracked due to handling during or after transportation.

Exercise Caution when moving a product with damaged glass.

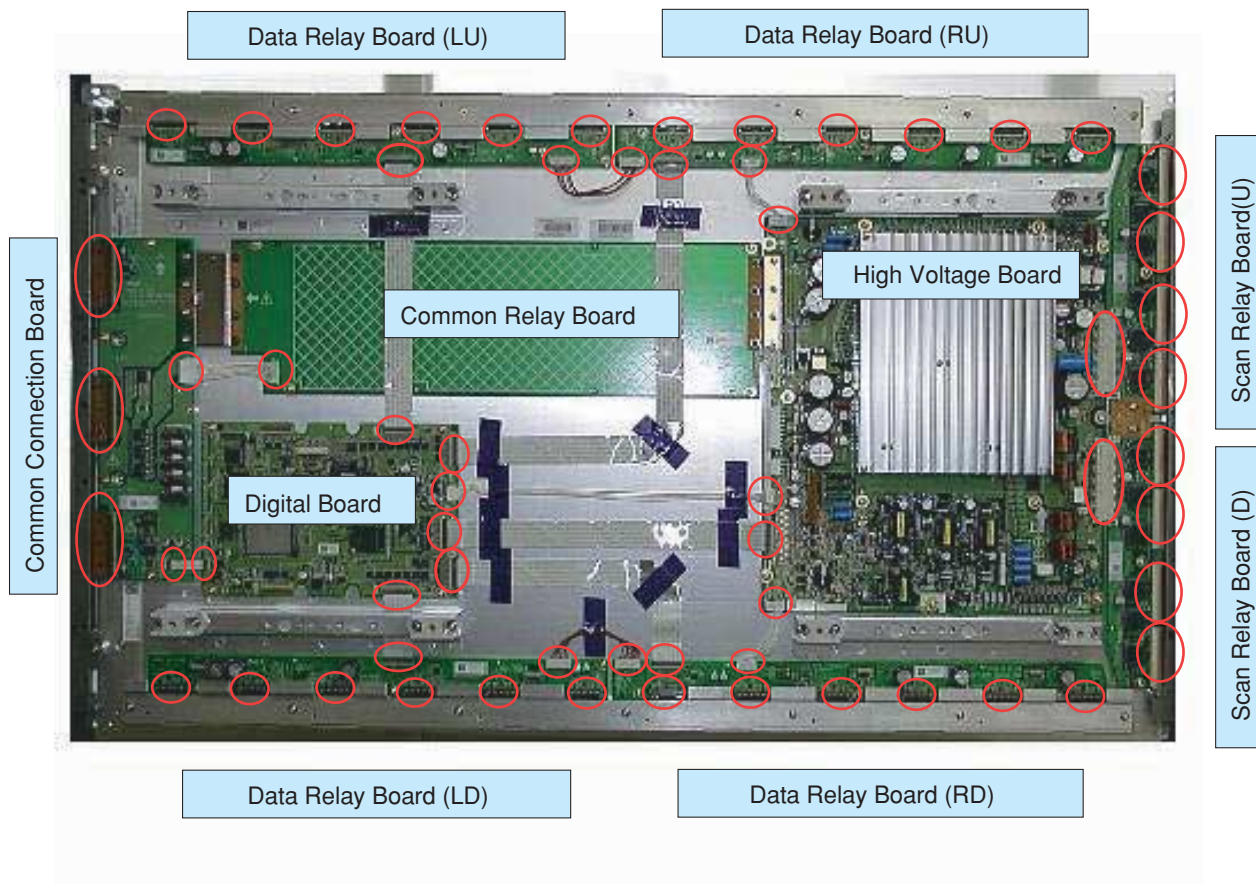
(3) Connectors/Cables

(3-1) Check connectors and cables for breakage or disconnection referring to the photos below.



(Caution) Take care for the cable handling. Careless handling in production line may cause this Failure.

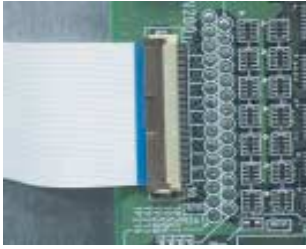
(3-2) Check connectors and cables whether they are connected and locked right.
See Page 114-115 for the right procedure of connection.



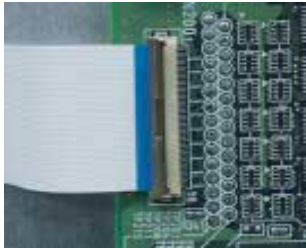
Right Connection (Part 1)

High voltage Board(Photo)
- Digital Board

Locked



Unlocked



Scan Relay Board (Photo)
- Panel



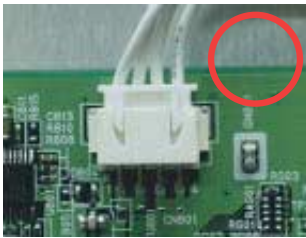
Common Relay Board (Photo)
- Panel



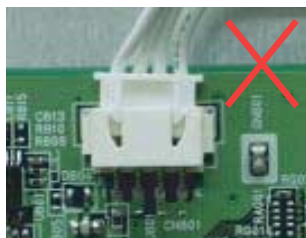
Right Connection (Part 2)

Digital Board (Photo)
-High Voltage Board

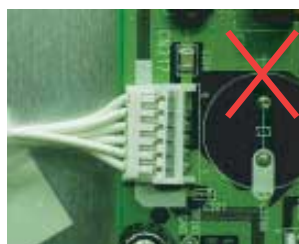
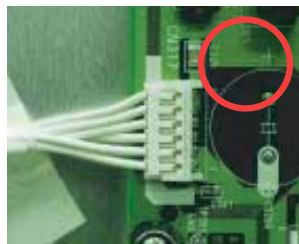
Locked



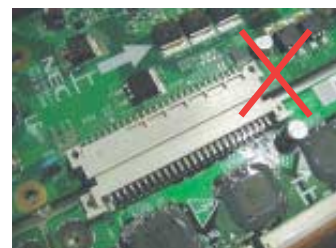
Unlocked



High Voltage Board (Photo)
-Data Relay Board



High Voltage Board (Photo)
-Scan Relay Board(Photo)



Right Connection (Part 3)

Data Relay Board (Photo)
-Panel

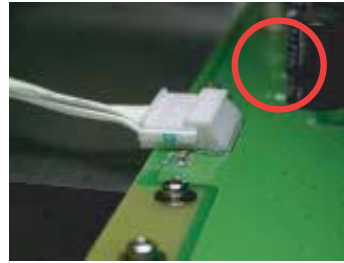
Locked



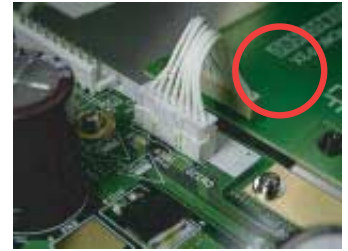
Unlocked



Common Connection Board (Photo)
-Common Relay Board



High Voltage Board (Photo)
-Common Relay Board (Photo)



Right Connection (Part 3)

Data Relay Board (Photo)
-Panel

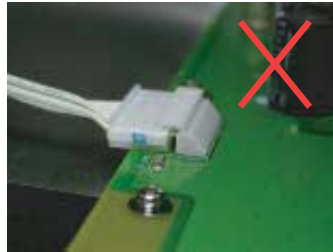
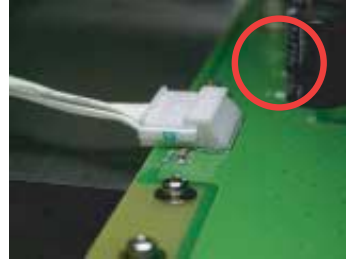
Locked



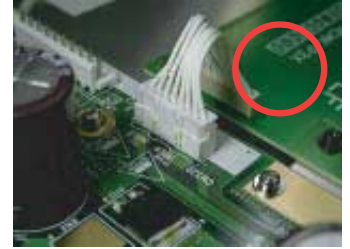
Unlocked



Common Connection Board (Photo)
-Common Relay Board

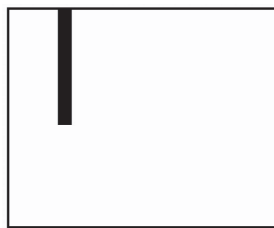


High Voltage Board (Photo)
-Common Relay Board (Photo)



Symptom : Vertical line Block

(Note) Typical Symptom are only shown. Another Symptom might appear.



Cause/Countermeasure:

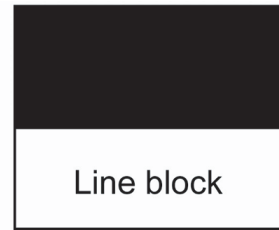
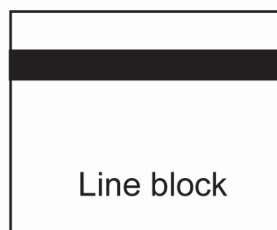
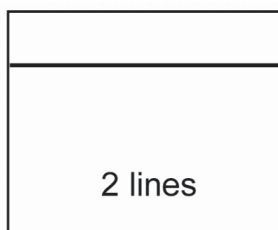
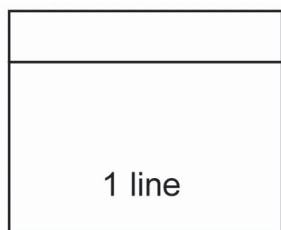
- ① Open or contact failure of Data flexible Cable
⇒ [Clean, Reconnect or exchange connector.](#)
- ② Failure in Data IC
⇒ [Exchange PDP.](#)

Cause/Countermeasure:

- ① Open or contact failure of connector between Data Relay Board and Digital Board/High Voltage Board
⇒ [Clean, Reconnect or exchange connector.](#)
- ② Open or contact failure of multiple Data flexible Cables
⇒ [Clean, Reconnect or exchange connector.](#)
- ③ Failure in Data Relay Board
⇒ [Exchange the Data Relay Board.](#)
- ④ Failure in multiple Data IC
⇒ [Exchange PDP.](#)

Horizontal Line

Symptom : Horizontal lines



Cause/Countermeasure:

- ① Failure in Scan IC on Scan Relay Board - Exchange Scan Relay Board.
- ② Open or contact failure of Scan Flexible Cable (CN01-CN04) at output side of Scan Relay Board (U,D)
⇒ [Clean, Reconnect or exchange connector.](#)
- ③ Contact failure of connector between Scan Board and Scan Relay Board
⇒ [Clean, Reconnect or exchange connector.](#)
- ④ Short between terminals of Scan IC due to screw dust
⇒ [Clean around the terminals.](#)

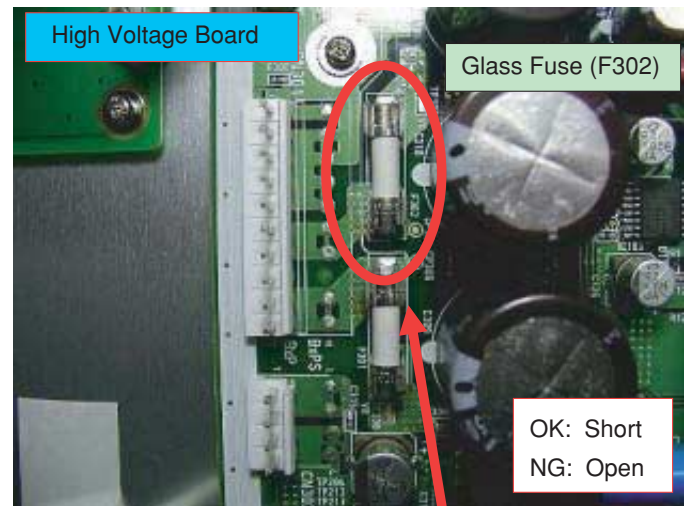
Picture Defect

(Note) Typical symptom are only shown.
Another Symptom might appear.

Symptom: No Picture (Priming flash).



Cause/Countermeasure: ① F302 open ⇒
Exchange High Voltage Board.

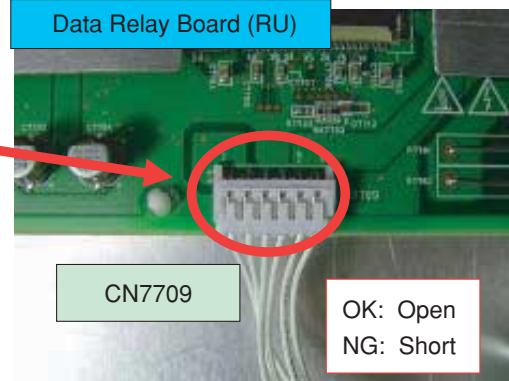
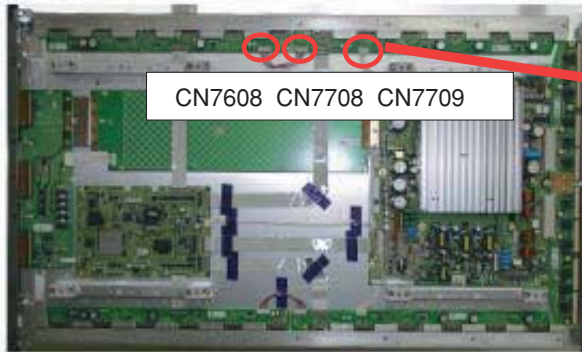


Cause/Countermeasure:

- ② If the connector CN7709 disconnected from Data Relay Board (RU) is short-circuited between Pin 1 (or 2) and GND (Pin 3 or 4) ⇒ Data IC is broken ⇒ [Exchange PDP](#).
- ③ If the connector CN7709 disconnected from Data Relay Board (RU) is short-circuited between Pin 5 (or 6) and GND (Pin 3 or 4) ⇒ Data Relay Board (LU) or (RU) is failed ⇒
 - a) If the connector CN7608 disconnected from Data Relay Board (LU) is short-circuited between Pin 1 and GND (Pin 2 or 6) ⇒ Data Relay Board (LU) is failed ⇒ [Exchange Data Relay Board \(LU\)](#).
 - b) If the connector CN7708 disconnected from Data Relay Board (RU) is short-circuited between Pin 1 and GND (Pin 2 or 6) ⇒ Data Relay Board (RU) is failed ⇒ [Exchange Data Relay Board \(RU\)](#).

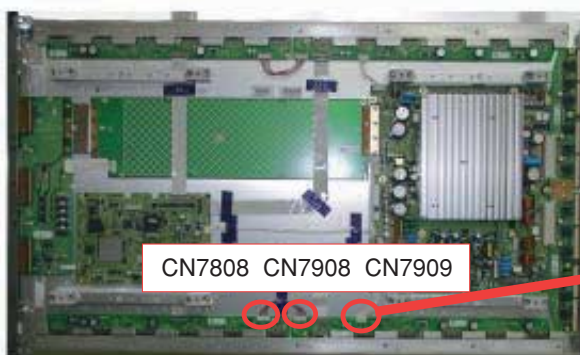
Data Relay Board (LU)

Data Relay Board (RU)



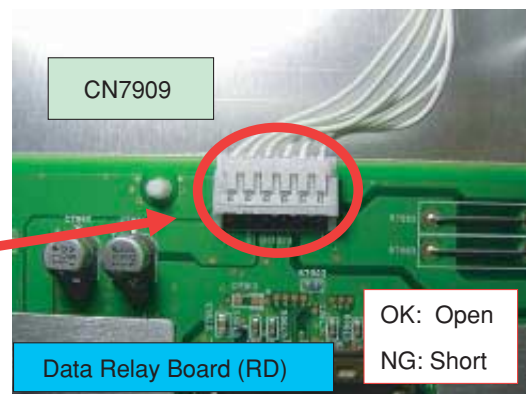
Cause/ Countermeasure :

- ④ If the connector CN7909 disconnected from Data Relay Board (RD) is short-circuited between Pin 1 (or 2) and GND (Pin 3 or 4) ⇒ Data IC is broken ⇒ [Exchange PDP](#).
- ⑤ If the connector CN7909 disconnected from Data Relay Board (RD) is short-circuited between Pin 5 (or 6) and GND (Pin 3 or 4) ⇒ Data Relay Board (LD) or (RD) is failed ⇒
 - a) If the connector CN7808 disconnected from Data Relay Board (LD) is short-circuited between Pin 8 and GND (Pin 3 or 7) ⇒ Data Relay Board (LD) is failed ⇒ [Exchange Data Relay Board \(LD\)](#).
 - b) If the connector CN7908 disconnected from Data Relay Board (RD) is short-circuited between Pin 8 and GND (Pin 3 or 7) ⇒ Data Relay Board (RD) is failed ⇒ [Exchange Data Relay Board \(RD\)](#).



Data Relay Board (LD)

Data Relay Board (RD)

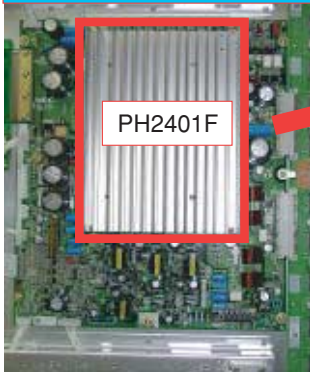


Symptom: No Picture. (Priming doesn't flash if W-X terminals are short-circuited.)



Cause/Countermeasure: No Diode characteristic ⇒ Exchange High Voltage Board.

High Voltage Board; Surface



High Voltage Board; Reverse

X (112)
W (109)
V (107)

T (99~103)

S (93~96)

R (91)

Q (86~89)

P (81~84)

O (76~78)

N (71~74)

M (66~69)

L (61~64)

K (57~59)

PH2401F

Checkpoints

| | |
|-----|-----|
| A-D | M-L |
| A-E | N-P |
| B-D | O-P |
| C-D | Q-R |
| E-R | R-S |
| F-N | R-T |
| G-M | S-T |
| H-I | T-V |
| I-J | W-X |
| K-L | |

OK: Diode characteristic
NG: Other than above

A (1~4)

B (6~9)

C (10~13)

D (15~18)

E (24)

F (33~35)

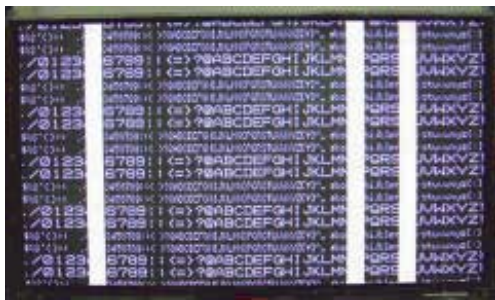
G (39~40)

H (49~50)

I (53)

J (55~56)

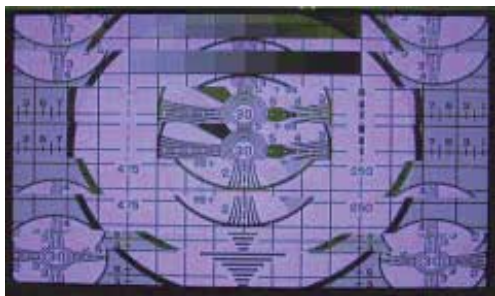
Symptom: Abnormalities in a picture



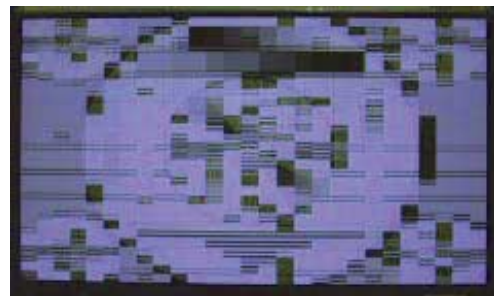
One or more vertical bands,
Multiple vertical lines



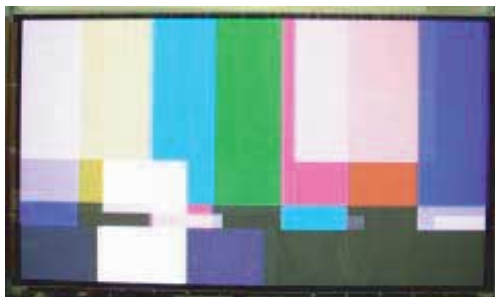
Transparent vertical band



Out of synchronization or
duplication



Mosaic



Rectangular color shear,color discrepancy,
shear in display



A number of lateral lines,
Regular noise

Cause/Countermeasure : ① Contact failure of connector adjacent to Digital Board or short circuit due to conductive obstacle
⇒ Clean or Reconnect

② Failure in circuit on Digital Board
⇒ Failure in Digital Board

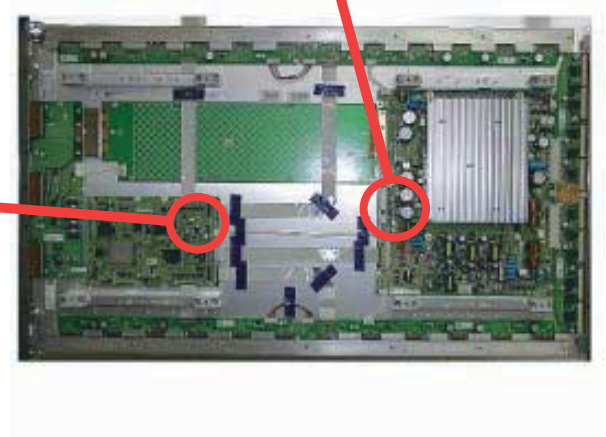
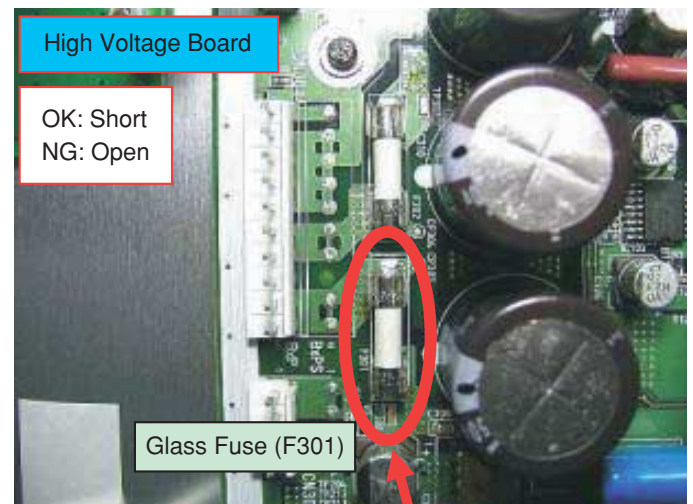
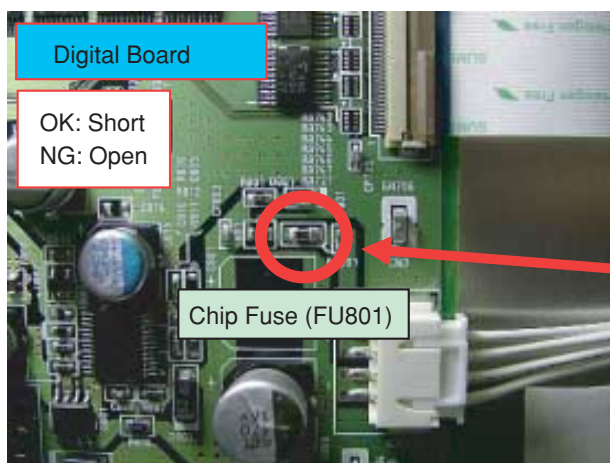
Power off

(Note) Typical Symptom are only shown. Another Symptom might appear.

Symptom: No Picture(Priming doesn't flash) ⇒ Power off



Cause/Countermeasure: ① F301 open ⇒ Exchange High Voltage Board.
② FU801 open ⇒ Exchange Digital Board.

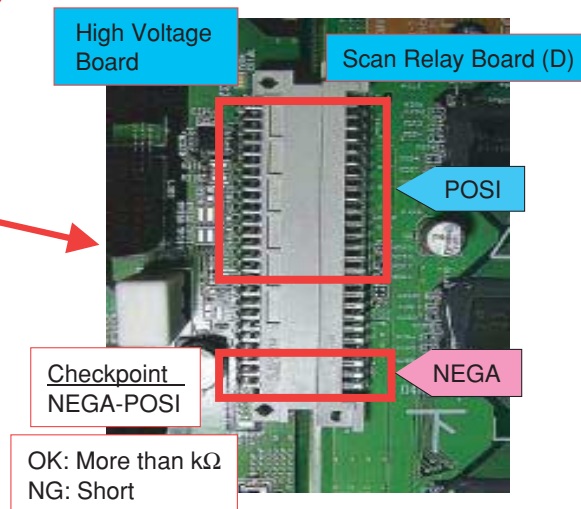
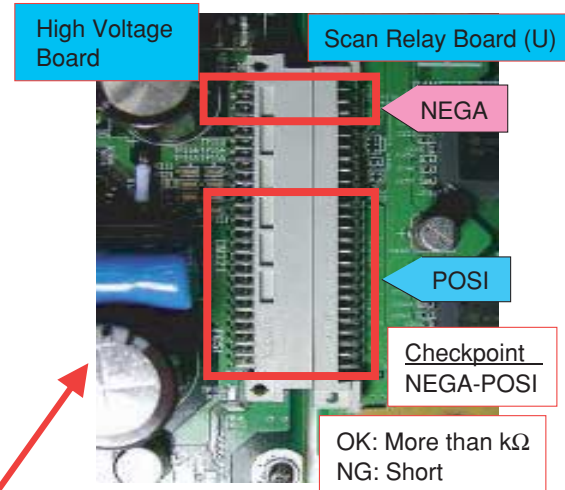


Cause/Countermeasure : If short-circuited, disconnect connector between High Voltage Board and Scan Relay Board and,

④ Short between NEGA-POSI on High Voltage Board ⇒ Exchange High Voltage Board.

⑤ Short between NEGA-POSI on Scan Relay Board (U) ⇒ Exchange Scan Relay Board (U).

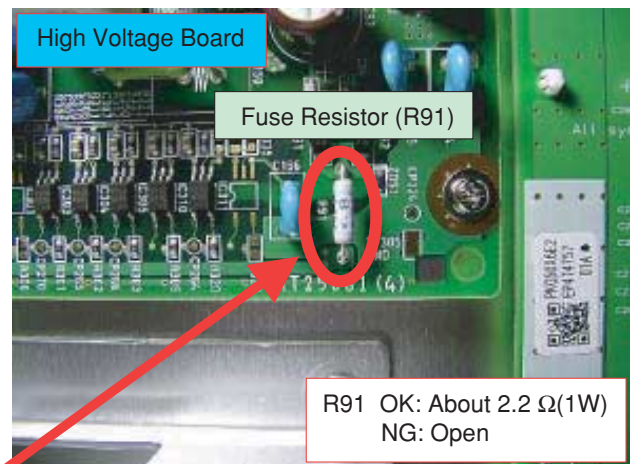
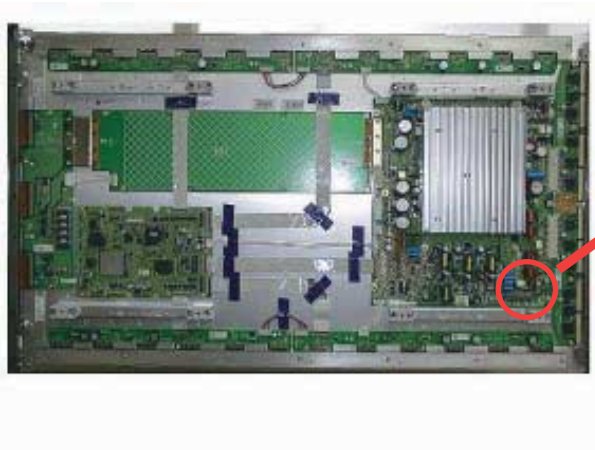
⑥ Short between NEGA-POSI on Scan Relay Board (D) ⇒ Exchange Scan Relay Board (D).



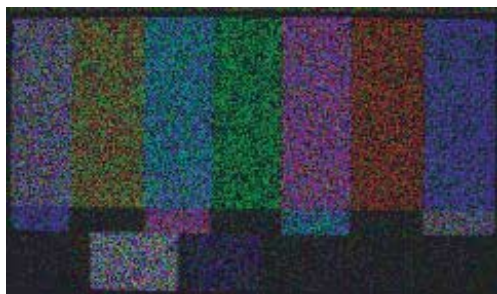
Symptom: No Picture \Rightarrow Power off(Priming flash)



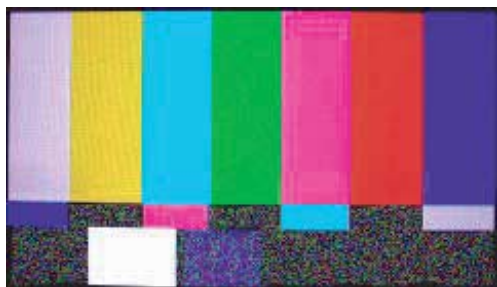
Cause/Countermeasure: R91 open \Rightarrow Exchange High Voltage Board.



Symptom: Failure in Writing
⇒ Power off



Dark and rough picture



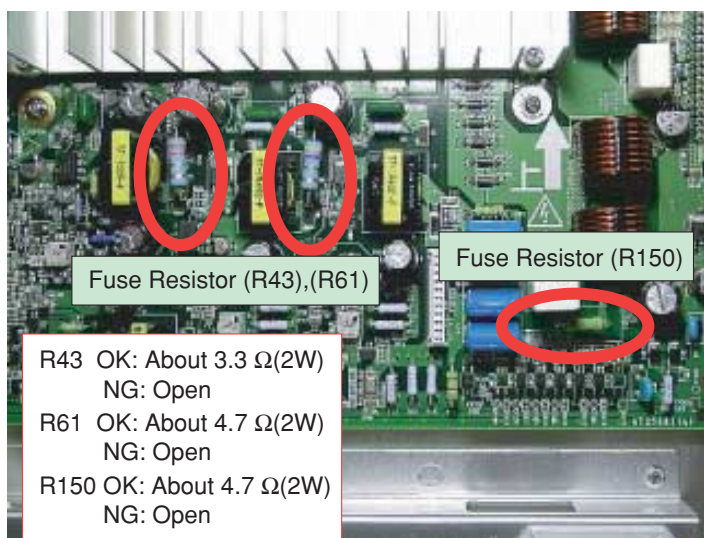
Many light spots on dark portion

Symptom: White pattern even in no
signal ⇒ Power off



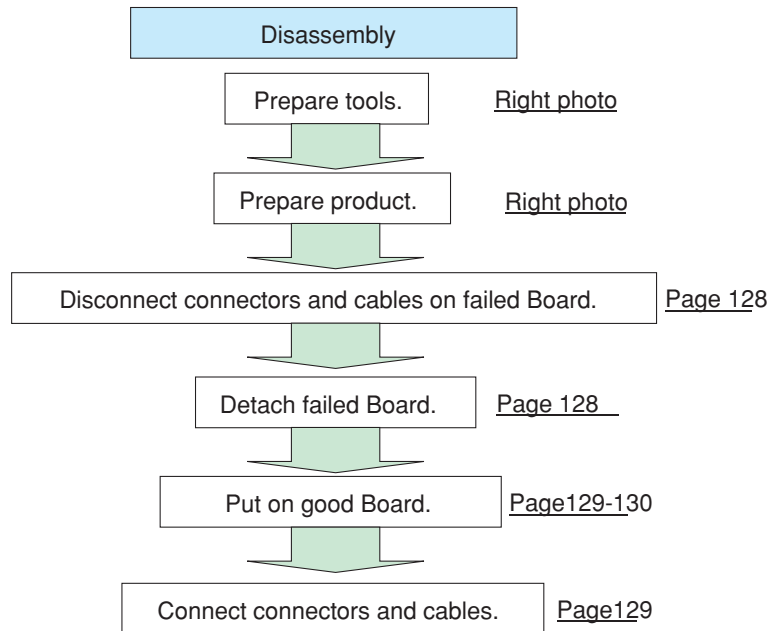
Cause/Countermeasure: R150 open
⇒ Exchange High Voltage Board.

Cause/Countermeasure: R43, R61 open
⇒ Exchange High Voltage Board.



METHOD OF DISASSEMBLY

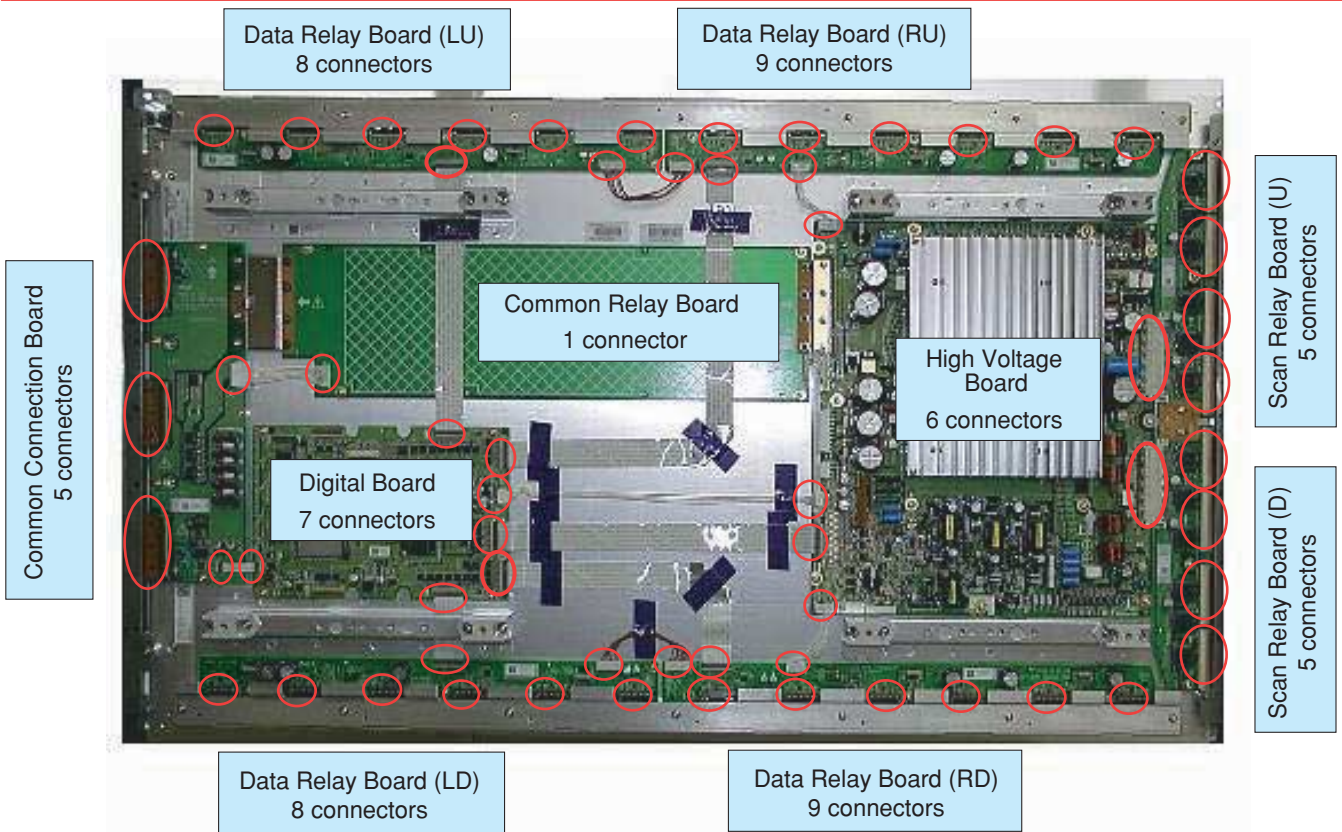
Follow the procedure below for diagnosis.



(Caution) Put cushion under failed PDP to cover general surface of glass before laying it's screen down.

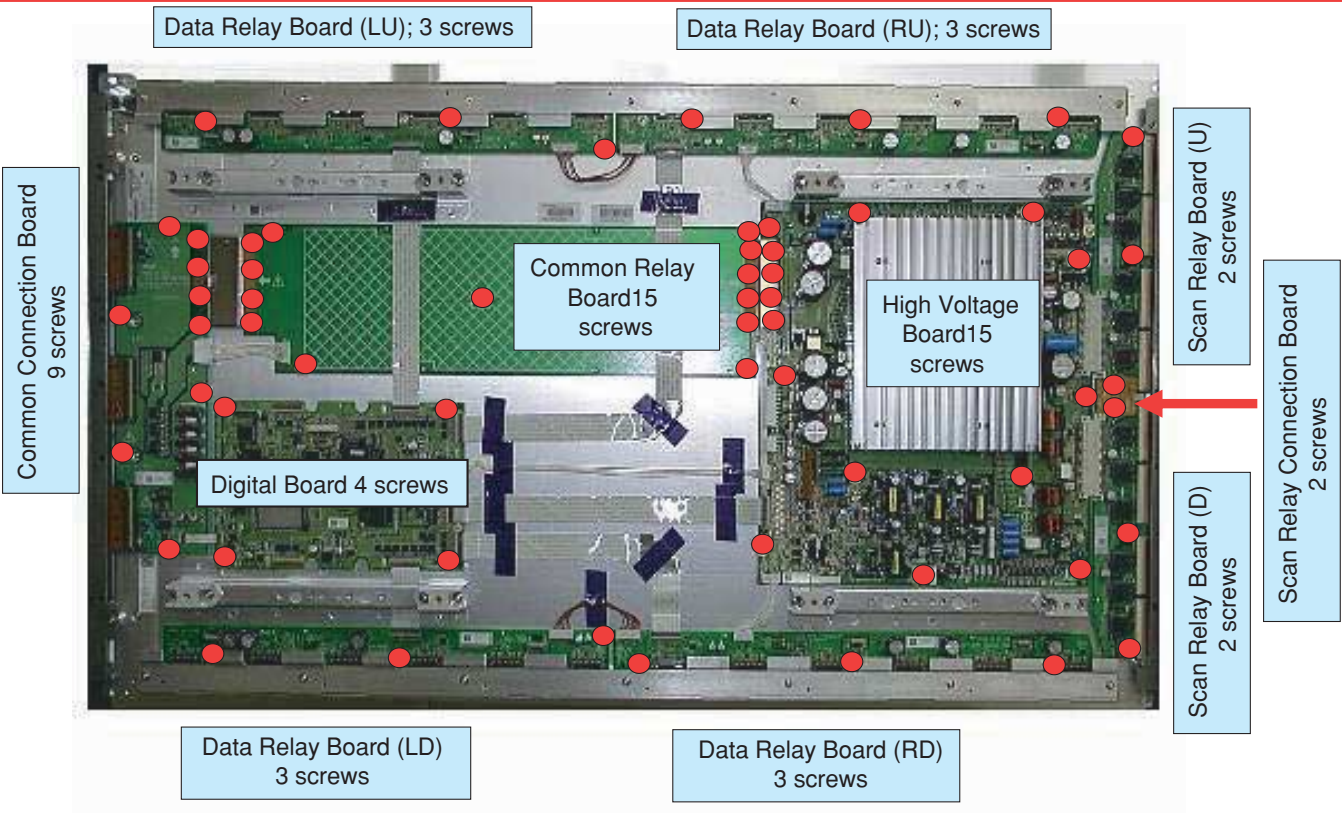
Detach connectors and cables on failed Board.

(Caution) Be careful of handling cables and connectors to avoid Failure. Be sure to take off Heat Sink before detach Data Relay Board. See Page 30 for the procedure.



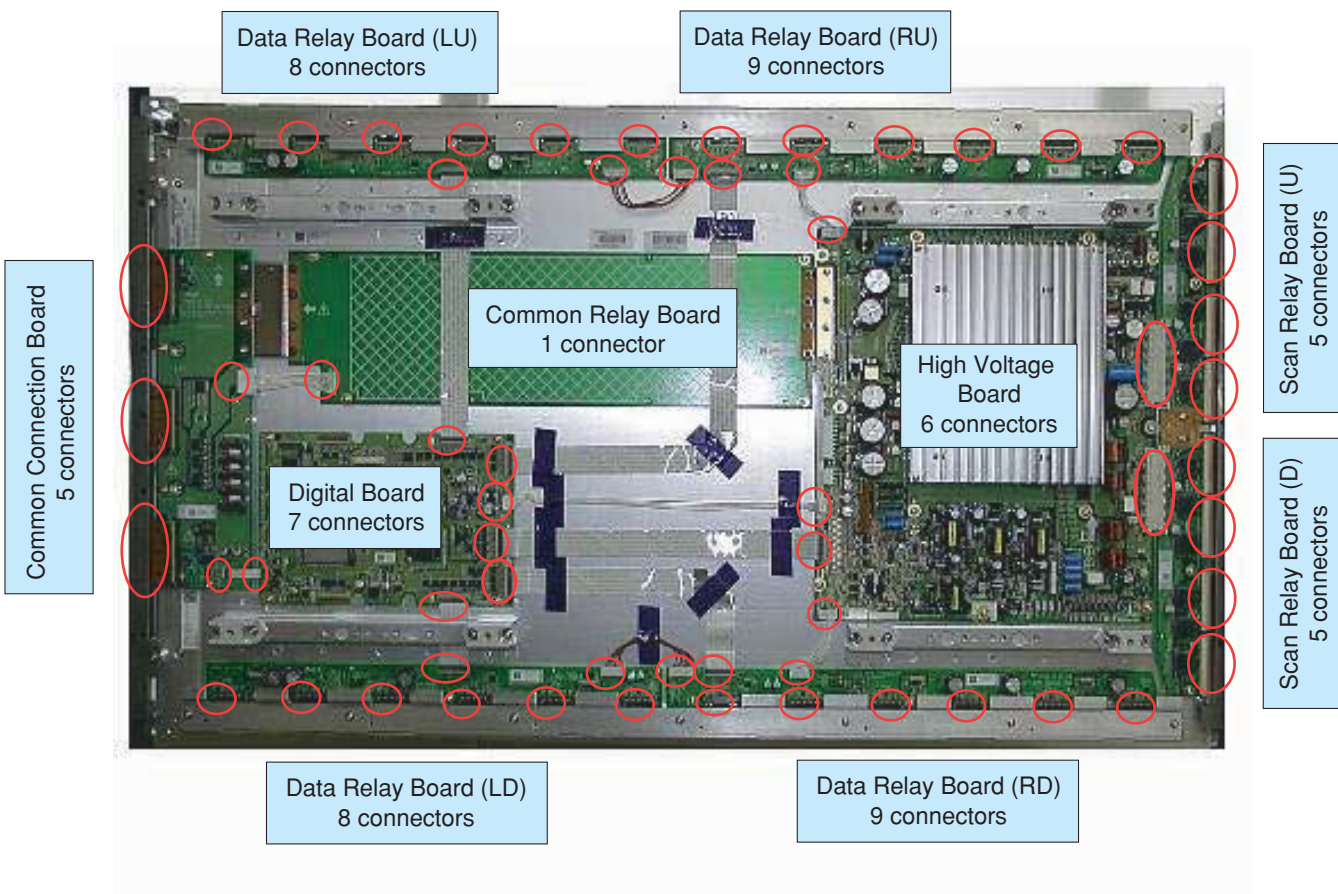
Loosen screws of failed Board and put on good Board.

(Caution) Be careful not to leave screwdriver, screw or screw dust. Be sure to take off Heat Sink before detach Data Relay Board. See the next page for the procedure.



Put on connectors and cables of good Board.

(Caution) Be sure to put on Heat Sink after assembling Data Relay Board.



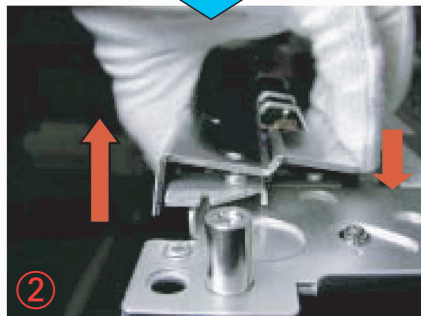
How to detach Heat Sink

(Caution) Stress on detaching easily breaks flex cable because Data TCP is sticking with Heat Sink (heat-conductive silicone sheet). (See Photo④)

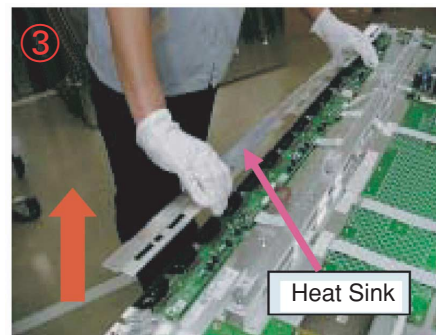
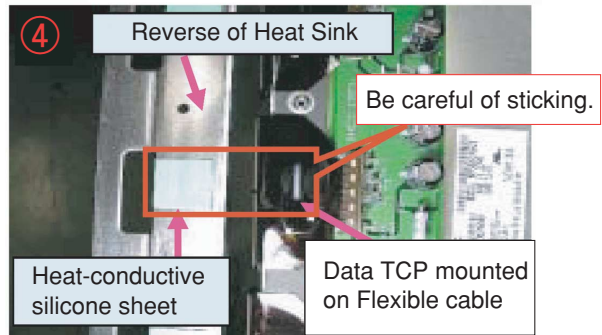


Before detaching

1. Slowly swing Heat Sink back and forth. (①, ②)
2. Gently lift Heat Sink up from Data TCP. (①, ②)
3. Repeat 1 and 2 until Heat Sink is taken off. (③)



Heat Sink and Data TCP



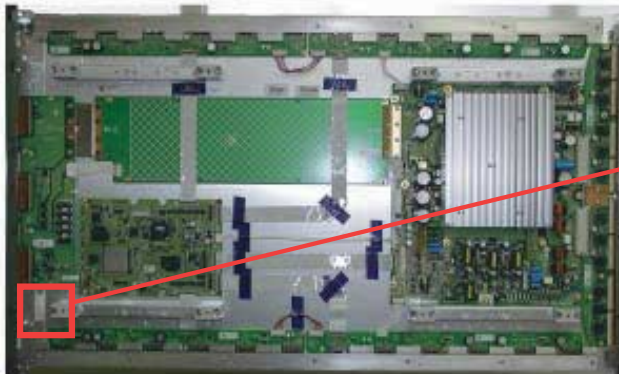
(1) Adjustments

Follow the procedure below.

- 1-1) Conduct "(3) Adjustment of Vsw1 & Vsw2" and "(4) Adjustment of Vbw & Vp", when High Voltage Board is replaced.
- 1-2) There is no need of adjustment if Board other than High Voltage Board.

(2) Voltage Label Check

Be sure to confirm voltages on Voltage label before conducting adjustment.



Example
Vbw : 115.2
Vsw1 : 220.2
VP : 249.8
Vsw2 : 210.1

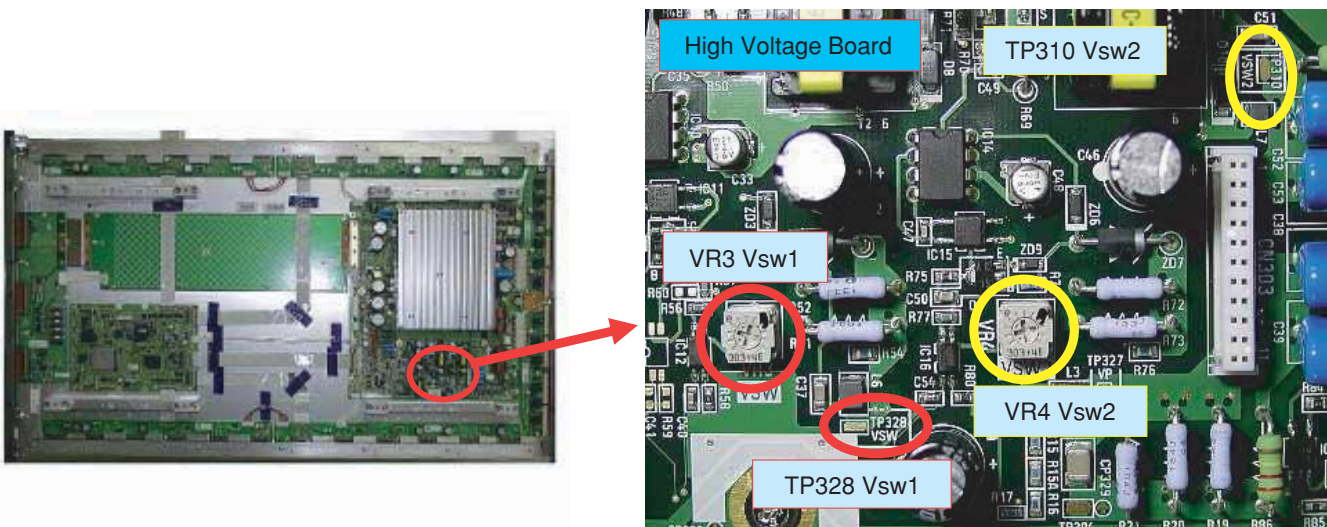


(3) Adjustment of Vsw1 & Vsw2

(Caution) Use the nearest chassis for grounding.

Vsw1 : Adjust VR3 so that the voltage between Test Pad (TP328) and GND becomes "Rated Voltage on Label $\pm 0.5V$ ".

Vsw2 : Adjust VR4 so that the voltage between Test Pad (TP310) and GND becomes "Rated Voltage on Label $\pm 0.5V$ ".



(4) Adjustment of Vbw & Vp

(Caution) Use the nearest chassis for grounding.

Vp : Adjust VR1 so that the voltage between Test Pad (TP327) and GND becomes
"Rated Voltage on Label $\pm 0.5V$ ".

Vbw : Adjust VR2 so that the voltage between Test Pad (TP329) and GND becomes
"Rated Voltage on Label $\pm 0.5V$ ".

